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BCG INOCULATION AND BCG VACCINATION

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A FEW DECADES ago the criticism passed on BCG vaccination was sharp indeed. From the United States,[1] Canada,[2] England,[3] Austria,[4] Switzerland,[5] France [6] and Sweden,[7] severe observations were made on the hypothetic clinicoimmunobiologic prerequisites for Calmette's method of vaccination and on the very optimistic and scientifically assailable reports on the results achieved. Then, on top of this criticism, came the Lübeck tragedy,[8] in which a number of newborn infants died after being given what was alleged to be BCG vaccine, but what was in reality a mixture of BCG and virulent tubercle bacilli. After this incident Calmette's vaccination was not worth much in the eyes of most persons, and in some countries its use was forbidden by law. It was more or less generally predicted that this vaccination would

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1. Petroff, S. A.; Arnold, B., and Steenken, W., Jr.: A Study of Bacillus Calmette-Guérin (BCG), Am. Rev. Tuberc. **19**:9 (Jan.) 1929. Petroff, S. A., and Branch, A.: Bacillus Calmette-Guérin (B.C.G.), Am. J. Pub. Health **18**:843 (July) 1928.

2. Watson, E. A.: Researches on Bacillus-Calmette-Guérin and Experimental Vaccination Against Bovine Tuberculosis, J. Am. Vet. M. A. **73**:799 (Nov. 7) 1928.

3. Greenwood, M.: Professor Calmette's Statistical Study of B.C.G. Vaccination, Brit. M. J. **1**:793 (May 12) 1928.

4. Pirquet, C.: Allergie nach Lebensalter und Geschlecht bei der Tuberkulose, Wien. klin. Wchnschr. **41**:797 (June 7) 1928. Rosenfeld, S.: Der statistische Beweis für die Immunisierung Neugeborener mit B.C.G., ibid. **41**: 800 (June 7) 1928.

5. Taillens, J.: Sur le B.C.G., Rev. méd. de la Suisse Rom. **50**:837 (Dec. 25) 1930.

6. Nobécourt, P.: Cutiréactions positives à la tuberculine et tuberculose chez des enfants vaccinés préventivement par ingestion de B C G pendant les premiers jours de la vie, Rev. gén. de clin. et de thérap. **42**:225 (April 7) 1928.

7. Medin, O.: Calmettes immuniseringsförsök mot tuberkulos, Hygiea **87**:245 (April 15) 1925. Wallgren, A.: Observations critiques sur la vaccination antituberculeuse de Calmette, Acta pædiat. **7**:120, 1927.

8. Lübeck Disaster, editorial, Am. J. Pub. Health **22**:296 (March) 1932.

soon die out, to become part of the past in the history of the struggle against tuberculosis.

The BCG vaccine, however, asserted itself tenaciously, and, contrary to expectations in the thirties, it not only survived its predicted fate but, what is more, at present is winning ground every day. In such countries as Germany, where its use was formerly forbidden, workers are about to start a large scale vaccination program. In several other countries, such as England and the United States, where physicians assumed an extremely skeptical attitude toward the value of the vaccination as a prophylactic measure against tuberculosis, vaccination tests on a large scale are either being carried out or being planned. This change in attitude is to be attributed to favorable experience with, and the lessons learned from, the value of the vaccine since the principles for carrying out the vaccination have been changed.

The only thing BCG vaccination of today has in common with that recommended by Calmette and his co-workers is the vaccine itself. They gave large doses of vaccine orally to newborn infants, who were vaccinated while they were still in an infectious environment, and no control study was made to ascertain whether the vaccine had taken effect. The present principles of vaccination emanated from Sweden [9] and Norway [10] in the middle twenties, and the purpose is to render persons sensitive to tuberculin by means of parenteral inoculation and to protect such persons from virulent infection until sensitivity to tuberculin has developed. In the opinion of most authors, the desirable specific immunity does not exist before the appearance of sensitivity to tuberculin, and it is assumed that this immunity might possibly disappear when the sensitivity wears off. On the other hand, a vaccination during the incubation period of a virulent infection or the occurrence of a virulent infection during the incubation period (six to eight weeks) of the BCG vaccine or after the sensitivity to tuberculin has disappeared should, according to these workers, have no inhibiting effect on the course of the tuberculous infection.

About 50 reports were made on the results obtained with BCG vaccination. Most of these reports were recently critically examined

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9. Wallgren, A.: Résultats de la vaccination intracutanée contre la tuberculose au moyen du BCG, Ann. Inst. Pasteur **43**:799 (June) 1929; Intradermal Vaccinations with BCG Virus: Preliminary Note, J. A. M. A. **91**:1876 (Dec. 15) 1928.

10. Heimbeck, J.: Sur la vaccination préventive de la tuberculose par injection sous-cutanée de BCG (chenzles élèves-infirmières de l'hôspital Ulleval, à Oslo [Norwège]), Presse méd. **37**:1391 (Oct. 26) 1929; Sur la vaccination contre la tuberculose par injection sous-cutanée de BCG chez les adultes qui ne réagissent pas à la tuberculine, Ann Inst. Pasteur **42**:170 (Feb.) 1928.

by Levine and Sackett,[11] who showed that each of them was, for one reason or another, devoid of value as evidence, especially since in the majority of studies a series of unvaccinated controls either was lacking altogether or was inadequate. The opinion expressed by Levine and Sackett on the publications they studied was undoubtedly correct; the conclusions drawn by the aforementioned authors were in most cases open to criticism and did not satisfy the criteria of adequate control material. This insufficiency applies also to investigations made in Sweden by Anderson and Belfrage,[12] Nordwall [13] and Wallgren.[14] In these studies the controls formed far too small a series, were taken from a different period or were missing altogether. None of these studies, however, claimed to give a numerical comparison of a vaccinated and an unvaccinated group. The morbidity and mortality of the vaccinated patients was, however, extremely slight, not only in these reports but also in most of the others.

It is impossible to obtain an adequate control group of unvaccinated persons in a country such as Sweden, where the previous experience with BCG vaccination, practiced in accordance with the principles adopted from the beginning, is so favorable that it would never occur to a physician deliberately to leave a tuberculin-negative group unvaccinated merely for experimental purposes and thus to expose such persons to the dangers accompanying a virulent primary infection. It is considered by Swedish physicians a dangerous experiment which they have no right to carry out.[15] A Swedish physician who was to do such a thing for experimental purposes would run the risk of being brought before court and punished. Such tests must therefore be left to physicians in those countries where BCG vaccination is still viewed with skepticism and where its value has not yet been realized.

There were, however, three studies which ought to satisfy the most exacting skeptics. These publications were not included in the table

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11. Levine, M. I., and Sackett, M. F.: Results of BCG Immunization in New York City, Am. Rev. Tuberc. **53**:517 (June) 1946.

12. Anderson, H., and Belfrage, H.: Ten Years' Experience of BCG-Vaccination at Gothenburg, Acta pædiat. **26**:1, 1939.

13. Nordwall, U.: The Influence of BCG-Vaccination on the Tuberculosis Frequency at the Sophiahemmet School for Nurses in Stockholm, Acta tuberc. Scandinav. **18**:45, 1944.

14. Wallgren, A.: Value of Calmette Vaccination in Prevention of Tuberculosis in Childhood, J. A. M. A. **103**:1341 (Nov. 3) 1934.

15. An example of the deleterious effect of a primary infection is that of 88 infected conscripts with negative reactions to tuberculin who had refused BCG vaccination; 25 became ill with tuberculosis, necessitating treatment, and 3 died of meningitis and miliary tuberculosis.

given by Levine and Sackett but were published later, during 1946 and 1947. These studies were made by Hyge [16] (Denmark), Aronson and Palmer [17] (United States) and Ferguson [18] (Canada).

		Patients Vaccinated with BCG			Patients Not Vaccinated with BCG			
			Patients with Tuberculosis			Patients with Tuberculosis		
Author	Age, Yr.	No. Given Vaccine	No.	%	No. Not Given Vaccine	No.	%	Comment
Hyge (Copenhagen)	12 to 18	106	2	1.9	94	41	43.6	Pupils in a school for girls
Ferguson (Saskatchewan)	Adults	203	5	2.5	113	18	15.9	Nurses in a sanatorium
Aronson and Palmer (Philadelphia)	1 to 20	1,550	40	2.6	1,457	185	12.7	Indians in reservations in United States and Alaska

In each of these investigations, persons in the vaccinated and in the unvaccinated group were of the same age and from the same environment and both groups were exposed to the same dangers of infection, so that from a scientific point of view the studies may be considered unassailable.

Thus, it was apparent from these three studies that the unvaccinated group had a morbidity from tuberculosis that was five to twenty times as great as that of the vaccinated group. The difference between the two groups in the series of Ferguson and of Aronson and Palmer would probably have been still greater if the vaccinated patients had been protected before exposure to virulent infection. This fact might possibly have played a role, especially in Ferguson's study, in which the danger of infection for the sanatorium staff must be considered very great.

As far as I know there is no such adequate study, the result of which would justify one in disclaiming the immunizing effect of BCG vaccination and in denying its value as a preventive measure and a means of increasing resistance. The investigation published in 1946 by Levine and Sackett, in which they showed that in their opinion BCG vaccination is of no practical value, attracted much attention, and those who read only more or less correct abstracts of the article might easily have been induced to assume a negative attitude toward this method of vaccination. I have received, both from Sweden and abroad, copies of such abstracts, soliciting an explanation of the discrepancy between

16. Hyge, T. V.: Epidemic of Tuberculosis in a State School, Acta tuberc. Scandinav. **21**:1, 1947.

17. Aronson, J. D., and Palmer, C. E.: Experience with BCG Vaccine in the Control of Tuberculosis Among North American Indians, Pub. Health Rep. **61**:802 (June 7) 1946.

18. Ferguson, R. G.: BCG Vaccination in Hospitals and Sanatoria of Saskatchewan: Study Carried out by National Research Council of Canada, Canad. J. Pub. Health **37**:435 (Nov.) 1946.

the results obtained by Levine and Sackett and those obtained by other authors who claimed the efficacy of BCG vaccination. The study in question aroused much interest because it seemed irreproachable from a scientific point of view and because the vaccinated and the unvaccinated group seemed fully comparable.

From Jan. 1, 1933 to Jan. 1, 1944 the Bureau of Laboratories of the New York City Department of Health practiced BCG vaccination on children sent to the Bureau from various hospitals in the city of New York. Alternate infants with negative reactions to tuberculin from tuberculous families were given intracutaneous injections of the vaccine, while every other child was left unvaccinated, as a control. The children were then observed for the following five years or more by staff nurses, who visited them once a month, and every third month they were examined by the staff pediatrician. Tuberculin tests and roentgenographic examinations were made at fairly regular intervals. Children with negative reactions to tuberculin of such parents as were not willing to cooperate were excluded from the investigation, whereas all other children with negative reactions to tuberculin were included. The vaccinated group consisted of 566 infants and the unvaccinated group of 528. Of the vaccinated children 87.6 per cent showed positive reactions to tuberculin from vaccination. Altogether, 8 deaths from tuberculosis occurred in each group, with a percentage of 1.4 for the vaccinated group and 1.51 for the unvaccinated group. No information is available on the morbidity rate for tuberculosis in these two groups. It is hoped that Levine and Sackett will complement their study with such information as roentgenographic findings. A comparison of the two groups showed that such factors as frequency of exposure, distribution as to race and the social conditions of the two groups were similar. So far, one must admit that the authors were justified in stating that the two groups constituted a fair basis for the study of the efficacy of BCG inoculation against tuberculosis.

One cannot, however, judge the value of BCG vaccination solely from the frequency of tuberculosis among subjects inoculated with BCG. A BCG-inoculated child need not be a BCG-vaccinated one; as a matter of fact, he never is during the first few weeks after inoculation. An infant can be considered as BCG vaccinated only on condition that he has become sensitive to tuberculin by the inoculation. Virulent infections appearing the last six weeks before inoculation or within six to eight weeks after inoculation attack the inoculated infant before any enhancement of resistance has been possible; i. e., it is the BCG-inoculated child, not the BCG-vaccinated child, who is infected. An examination of the 8 children who died among the BCG-inoculated children in the series of Levine and Sackett shows that all were definitely exposed to virulent human tubercle bacilli in their homes within five

weeks before inoculation. After inoculation the children continued to live in the same tuberculous environment, without any attempt being made to protect them from virulent infection. It seems that nothing less than a miracle could have protected these children from tuberculosis before the BCG vaccination took effect. They admittedly had been inoculated with BCG, but at a time when they were already infected or, possibly, they became infected before BCG immunity had time to develop. These children were obviously not vaccinated at all and this group cannot therefore be numbered with the group of vaccinated infants.

Levine and Sackett were well aware of this source of error in their follow-up [11] study, which showed what a difference it makes when one discriminates between BCG inoculation and BCG vaccination. These authors compared the mortality percentage of a group of infants who were protected from virulent infection three months before and three months after BCG inoculation with that of another group who were not vaccinated, but who were likewise protected against virulent infection for six months. In the former group, consisting of 91 children, they found a mortality from tuberculosis of 1.1 per cent, and in the latter group, of the 96 infants, a mortality of 3.1 per cent. The number of deaths in the first group should most likely have been zero, for the child in question died at the age of 3 months and, judging from appearances, was infected at birth by its mother, who was at that time dying of tuberculosis. The authors concluded [11]:

> . . . It would appear . . . that the inoculations with BCG might be of some protection if children were separated from the tuberculous environment for a sufficiently long period of time before and after vaccination.

They stated, however, that from a practical point of view this method is an inconvenient one. According to these authors, the only measures of practical value are such as can be applied while the children live at home in the tuberculous environment.

Such a measure would, of course, be the ideal and the simplest, but it must be considered a utopian desideratum. So long as such a really expedient method is lacking, one must make the most of the means at one's disposal when it is a question of diminishing the danger to which children living in a tuberculous environment are exposed. In doing so, one must choose between isolating the diseased person from the child as long as the condition of the former is infectious, that is, for an indefinite period, or separating the diseased patient for a limited time (not six months, as recommended by Levine and Sackett, but generally two to four months), during which time the child must be inoculated with BCG. An effective isolation from the diseased person, by hospitalization of the patient, for example, is admittedly a well tried and reliable procedure. It has, however, one drawback—

the isolation is generally long; it incurs great expense, and, in cases in which the patient does not die of his disease, it is difficult to predict the necessary duration of the period of isolation. Freedom from bacilli and from infection in the case of patients with pulmonary tuberculosis is a relative property, which may at any moment be transformed into infectivity, with secretion and spread of tubercle bacilli. If the unvaccinated child comes into contact with such a temporarily infectious phthisic member of the family, he can contract a dangerous first infection type of tuberculosis, while a child vaccinated with BCG is, as a rule, protected. This is the reason that I consider vaccination with BCG of greater advantage than removing the tuberculous person from the house without vaccination of the child, an opinion that is certainly shared by all Scandinavian phthisiologists.

SUMMARY

Vaccination with BCG consists not only in inoculation of the child with the vaccine but in preinoculation and postinoculation control of sensitivity to tuberculin, in order to ascertain that the vaccinated child is free from virulent infection before inoculation and that sensitivity to tuberculin has developed after inoculation. Only inoculated children who fulfil this requirement can be considered vaccinated. In follow-up studies in which a vaccinated group is compared with an unvaccinated group, only adequately vaccinated children should be included in the former.

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COMPLICATIONS OF VACCINATION AGAINST SMALLPOX

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EARLY in March 1947, a 50 year old American business man in an early stage of smallpox came to New York from Mexico. The case was not recognized during life, and isolation was not enforced until shortly before his death. As a result, a small outbreak of smallpox occurred in March and April. There were 12 cases, with 2 deaths.[1] A large number of people had been exposed, and it was considered wise to urge vaccination on all city residents. Approximately 5,000,000 people were vaccinated in about a month. This presented an opportunity to study the results of vaccination in a large group from the point of view of possible complications.

IMMUNE STATUS OF THE POPULATION

An attempt was made in the first few days to have all persons vaccinated return for a reading of the vaccination site. Unfortunately, this plan had to be abandoned on account of shortage of personnel. However, about 25,000 of those vaccinated did return, and notes were made of the reactions obtained. These records were turned over to me by Dr. Margaret Barnard. With the assistance of Mr. Louis Weiner, chief of the Statistical Division of the Department of Health, an analysis was made of the types of reaction. No attempt was made in the statistical analysis to differentiate between primary and accelerated takes, since such differentiation depends on observing the time when the height of erythema is reached and passed.[2] Most subjects in the study returned only once for a reading, and successive observations were therefore not made. All reactions which showed good vesiculation and scab formation were listed as successful vaccinations. Individual

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From the Bureau of Preventable Diseases, Department of Health of New York City.

Presented before the New York Academy of Medicine, Section of Pediatrics, Feb. 13, 1947.

1. Greenberg, M.: Smallpox, Am. J. Med. **3**:355-370 (Sept.) 1947. Weinstein, I.: An Outbreak of Smallpox in New York City, Am. J. Pub. Health **37**: 1376-1384 (Nov.) 1947.

2. Leake, J. P.: Questions and Answers on Smallpox and Vaccination, Pub. Health Rep. **60**:221-238 (Jan. 28) 1927.

cards were obtained for 25,295 vaccinated persons. Of these, 1,669 had no take and were excluded. There remained 23,626, and of these, 13,752, or 58.2 per cent, had successful takes and 9,874, or 41.8 per cent, were immune. The same difficulty arises in distinguishing between an immune and an accelerated reaction as in differentiating between an accelerated and a primary reaction. More than one observation has to be made. If the vaccinated site is seen only on the second or third day, and a papule and some erythema are present, the reaction may be called immune. If the patient is seen again several days later, there may be definite evidence of a successful accelerated reaction. There were 9,698 persons who returned for more than one reading. On the first reading, 5,250, or 54.1 per cent, were considered immune; on the second reading, 1,855, or 19.1 per cent. If corrections are made for the group of immune persons whose reactions were read only once, 73.6 per cent of the sample had successful reactions and 26.4 per cent immune reactions (table 1). These results indicate a high susceptibility to small-

TABLE 1.—*Results of Vaccination in New York City, 1947*

Number of Vaccinations Read	Successful Takes		Immune Reactions	
	Number	Per Cent	Number	Per Cent
23,626	13,752	58.2	9,874	41.8
	After Correction			
23,626	17,384	73.6	6,242	26.4

pox in the sample surveyed. Since the group came from all health centers in the city and was fairly representative of the sexes, age groups and races, it is fair to assume that it represented a cross section of the population of the city. An even higher degree of susceptibility to smallpox was found by Dr. John E. Sawhill,[3] physician to New York University. He vaccinated 7,380 students and teachers at the university and was able to get 3,117 to return for readings. Of these, 93 per cent had positive takes, 2 per cent were immune and 5 per cent had no reactions. These samplings indicate a low immunity to smallpox in the population of New York city and a need for widespread vaccination in the presence of a threatened epidemic.

POSTVACCINAL ENCEPHALITIS

The risk of encephalitis following vaccination was considered when the campaign was started. It was felt, however, that the risk of smallpox was greater. Vaccination has been proved, time and time again, to be the safest method of aborting an epidemic of smallpox. Soon

3. Sawhill, J. E.: Personal communication to the author.

after the termination of the program, and for two months thereafter, all cases of encephalitis and other neurotropic diseases reported to the Department of Health or given as causes of death were investigated.[4] A canvass was also made of hospitals to uncover such cases. As a result of this search, 49 cases were found in which the antemortem diagnosis of postvaccinal encephalitis was made. In 4 of these, however, autopsy showed that death was due to other causes: tuberculous meningitis, in 2 cases; brain tumor, in 1 case, and hypertensive vascular disease with coronary occlusion and cerebral congestion in 1 case. They were excluded, and the remaining 45 cases were considered. It should be pointed out that the clinical picture of postvaccinal encephalitis does not differ from that of other encephalitides and that the symptoms may also be simulated by such diverse conditions as meningitis, brain tumor or cerebral congestion.

Incidence.—Knowledge of postvaccinal encephalitis is derived largely from English and Netherland investigators, who have had most experience with it. Their rates are high, approximately 1 case to 5,000 vaccinations in Netherlands[5] and 1 to 50,000 in England.[6] The ratio of cases to vaccinations varies, according to the report of the International Office of Public Hygiene in 1930,[6] from no cases in Russia, Yugoslavia, Rumania, Portugal and Mexico, to 1 case to 100,000 vaccinations in Germany and 1 case to 30,000 vaccinations in Sweden. Variations in rates hold true not only for different countries but for different parts of, and for different periods in, the same country. In the Tyrol, for instance, the ratios were 1:4,500 in 1927, 1:1,200 in 1928 and 1:640 in 1929,[7] and in Scotland in 1942 the ratios were 1:6,600, in Fife, and 1:70,000, in Glasgow.[8] The 45 cases reported here give an incidence of 1 to 110,000 vaccinations.

Age and Sex.—From the literature it appears that postvaccinal encephalitis occurs more commonly in children between the ages of 3 and 12 years than in those younger or older. This may be due partly to the fact that in Europe the percentage of vaccinations per-

4. Greenberg, M., and Appelbaum, E.: Postvaccinal Encephalitis, Am. J. M. Sc. to be published.

5. Jitta, N. M. J.: Vaccinations antivariolique et encéphalite post-vaccinale dans les Pays-Bas, Bull. Office internat. d'hyg. pub. **23**:1804-1806 (Oct.) 1931.

6. Report of the Committee on Vaccination, Ministry of Health, Great Britain, London, His Majesty's Stationery Office, 1928. Further Report of the Committee on Vaccination, Ministry of Health, Great Britain, London, His Majesty's Stationery Office, 1930, Appendix III.

7. Kaiser, M.: Die Encephalitis post vaccinationem in Oesterreich, Arch. f. Kinderh. **93**:1-30 (March 13) 1931.

8. Fyfe, G. M., and Fleming, J. B.: Encephalomyelitis Following Vaccination in Fife, Brit. M. J. **2**:671-674 (Nov. 27) 1943. Anderson, T., and McKenzie, P.: Post-Vaccinal Encephalitis, Lancet **2**:667-668 (Dec. 5) 1942.

formed is greatest in this age group. However, even on the basis of specific rates for age, children appear to be affected more than infants or adults.[9] Scott[10] collected all cases of postvaccinal encephalitis up to 1930 and found that 7.2 per cent were of infants, whereas the average percentage of all vaccinations in infancy was 34.

Of the 45 cases seen by us none were of infants, and there were four times as many adults over 20 years of age as children. However, the ages of those vaccinated were not recorded, so that specific rates for age are not available. We do know that many more adults than children were vaccinated. The distribution of cases of postvaccinal encephalitis between the sexes was about equal. Three patients were Negroes, and the rest were white persons.

Symptoms.—The incubation period varied from one to twenty-eight days, with an average of ten to twelve days. The onset was usually abrupt, with fever, headache, vomiting and confusion. Symptoms in the milder cases were frequently dizziness, irritability and ataxia. In the severe cases, fever was high, and there occurred pronounced mental symptoms, such as disorientation, aphasia, delirium, convulsions, stupor and coma. Nuchal rigidity and positive Kernig and Brudzinski signs were present in most of the cases, and paralyses of the extremities were not unusual. Retention of urine was a common sign, and occasionally there was incontinence of urine or feces. The spinal fluid showed a moderate increase in cells in the majority of cases, and the protein concentration was usually increased. The sugar content was normal, and cultures of the fluids were uniformly sterile. The striking observation in the clinical picture was that even patients with the most alarming symptoms, such as hyperpyrexia and coma, frequently showed remarkable improvement in seventy-two hours and completely recovered in one or two weeks. Only 2 of the 41 patients that survived had any after-effects: one, hemiparesis, and the other, optic neuritis.

Mortality.—There were 4 deaths, a mortality of less than 9 per cent. Autopsies were obtained in all these cases, and in none were the characteristic lesions of postvaccinal encephalitis noted.[11] These consist of areas of softening in the white and gray matter, which extend some distance beyond the vessels and in which demyelination can be demonstrated. They are similar to those of postinfectious encephalitis

9. van Bouwdijk Bastiaanse, F. S.: Die in Holland beobachteten Fälle von Encephalomyelitis post-vaccinalis bis zum 1. Januar 1929, Ztschr. f. d. ges. Neurol. u. Psychiat. **134**:657-794 (July 25) 1931.

10. Scott, T. F. M.: Post-Vaccinal Encephalitis in Infancy, Brit. J. Child. Dis. **27**:245-269 (Oct.-Dec.) 1930.

11. Turnbull, H. M., and McIntosh, J.: Encephalomyelitis Following Vaccination, Brit. J. Exper. Path. **7**:181-222 (Aug.) 1926.

following smallpox, chickenpox and antirabies vaccination. They differ from the lesions of the virus encephalitides. In the latter, cuffing of the vessels in the brain and cord can usually be demonstrated, but it does not extend beyond the Virchow-Robin space, and demyelination is absent. Of the 4 brains examined, 2 showed congestion only, and the other 2, cuffing of the vessels but no demyelination.[12] Pathologically, therefore, none of the deaths could be ascribed to postvaccinal encephalitis. However, even if the deaths are assumed to have been due to postvaccinal encephalitis, the mortality is still very much lower than the 30 to 50 per cent reported from Europe.

GENERALIZED VACCINIA

Next to postvaccinal encephalitis, the commonest and most serious complication was generalized vaccinia. This term is used by some authors to indicate a widespread vaccinal rash in the absence of a preexisting dermatosis. Some of these authors have expressed the belief that the presence of a preexisting eczema means that the vaccinia has been spread by contact rather than by the blood stream. There seems to be little evidence for this point of view. It is known that vaccinia virus enters the blood stream soon after vaccination, and the rather rapid, generalized and simultaneous distribution of lesions argues for a general spread by the blood stream. Generalized vaccinia in a patient with a preexisting eczema has been given various names, such as eczema vaccinatum, eczema herpetiforme, pustulosis vacciniformis acuta and Kaposi's varicelliform eruption. The variety in nomenclature is probably due to the fact that the names are descriptive, and are not based on the etiologic factor. Lesions similar to those caused by vaccine virus may be due to the virus of herpes simplex.[13] In the present study we have included under the term generalized vaccinia all cases with a general spread of vaccinal lesions irrespective of whether there was a preexisting rash or not. We have excluded cases in which there was spread of vaccinal lesions only in the vicinity of the vaccination site or in adjacent areas, and also those in which an occasional lesion occurred at a distance.

We were able to gather 45 cases of generalized vaccinia. Laboratory confirmation of the diagnosis was attempted in 15 of them, and vaccinia virus was recovered in all by growth on chick embryo. These

12. Dr. Thomas M. Rivers, of the Hospital of the Rockefeller Institute, examined the sections in 3 cases, and Dr. P. Sacerdote, of the Mount Vernon Hospital, furnished his report of 1 case.

13. Barker, L. P., and Hallinger, E. S.: Systemic Herpes Simplex (Kaposi's Varicelliform Eruption), J. A. M. A. **135**:149-153 (Sept. 20) 1947. Ellis, F. A.: Eczema Vaccinatum: Its Relation to Generalized Vaccinia; Report of Two Cases, ibid. **104**:1891-1894 (May 25) 1935.

cases were reported in detail by Mustard and Hedrick.[14] No attempt was made to recover virus in the other cases, and the diagnosis rests on the clinical picture together with the fact that the generalized vesicular rash followed a vaccination or close contact with a vaccinated person.

Most of the lesions occurred in persons with a preexisting eczema. It will be noted from table 2 that 38 persons, or 84 per cent, had eczema preceding the generalized vaccinia. Only 7, or 16 per cent, had no preexisting rash. What is more significant is that 28, or 62 per cent, of those with eczema had not been vaccinated. All but 1 had been exposed intimately to 1 or more persons who had recently been vaccinated. This was usually in the home, but in the case of a few persons the exposure was to a recently vaccinated nurse in a hospital. All but

TABLE 2.—*Distribution of Generalized Vaccinia According to Vaccination Status and Preexisting Eczema*

		Not Vaccinated		Total	
Condition of Skin	Vaccinated	Contact with Vaccinated Person	No Contact	Number	Per Cent
Eczema	10	27	1	38	84
No eczema	7	..	..	7	16
Total	17	27	1	45	100

TABLE 3.—*Distribution of Generalized Vaccinia According to Age*

	0-1	1-2	2-3	3-4	4-5	0-4	5-9	10-14	15-19	20	Total
Number	15	8	4	4	4	35	1	0	2	7	45
Per cent	33	18	9	9	9	78	2	0	4	16	100

1 were children under 5 years of age, most of them infants under 1 year of age. Two deaths occurred in infants 4 and 6 months old, respectively, neither of whom had been vaccinated. The conclusion is justified that infants with eczema should not be vaccinated until the skin has cleared. Furthermore, no person taking care of an infant with eczema should be vaccinated, unless special precautions are taken to prevent contact of the eczematous child with the vaccinated site.

The age distribution of the 45 patients is given in table 3. More than three fourths of the cases of generalized vaccinia occurred in children under 5 years, and a third in infants under 1 year. However, no age group is immune; 1 of the patients was a man of 82. There were 34 male and 11 female patients. Twenty-two were white persons

14. Mustard, H. S., Jr., and Hedrick, P. W.: Generalized Vaccinia: A Study of Fifteen Cases, J. Pediat. **33**:281-294 (Sept.) 1948.

and 23 Negroes (table 4). The occurrence of more cases among Negroes than among white persons, although they form only about 7 per cent of the total population of the city, can undoubtedly be explained by the fact that they live under less favorable conditions of housing, so that contact is closer. We have no explanation for the preponderance of males.

Of the 17 patients who had been vaccinated, the rash appeared within a week (average, three days) after vaccination in 15 and within two to three weeks in the other 2. Of the 28 children who were not vaccinated, the onset was usually from two to three weeks after vaccination in the contact. Most of the takes were primary; a few were accelerated or vaccinoid. None followed immune reactions in vaccinated persons.

OTHER DERMATOLOGIC CONDITIONS

The commonest complaint received was of painful arm with regional lymphadenopathy. Most such conditions were in persons with uncom-

TABLE 4.—*Distribution of Generalized Vaccinia According to Sex and Color*

	White	Negro	Total
Male	17	17	34
Female	5	6	11
Total	22	23	45

plicated takes. Local infections were occasionally seen. It was not uncommon to see blebs or crusts of impetigo around the site of vaccination. Generalized macular, papular and urticarial lesions were also observed, but no record was made of the frequency. The only serious infection resulting from vaccination was that in a man aged 66 who was vaccinated on the left arm. He had a primary take about a week later. Local spread of lesions to the lower part of the arm and to the shoulder followed. Cellulitis of the arm developed and spread to the left side of the chest and back. He ran a septic type of fever and died one month after vaccination. The diagnosis was sepsis and bronchopneumonia.

TETANUS

Tetanus used to be one of the bugaboos of vaccination. Advances made in the care of vaccinated calves, in the collection and preservation of lymph and in tests for bacterial contamination have made vaccine virus as distributed a safe product. The elimination of dressings over vaccinated areas has further minimized the chances of deep implantation of accidental infection by retained exudate. It is pleasant to record that not a single case of tetanus occurred in the city as a result of vaccination.

FALSE POSITIVE SEROLOGIC REACTIONS FOR SYPHILIS

Barnard [15] was the first to record the occurrence of a false positive reaction to the Kahn test following vaccination in 1940. Since then, there have been a number of investigations confirming his observations,[16] and indicating an incidence of 12 to 16 per cent. After the campaign for mass vaccination in April and May, Rosenthal and Widelock,[17] of the Department of Health, studied the question again. It is the practice in this department to test routinely all samples of blood by the Mazzini test. A positive or doubtful reaction is confirmed by the Kahn precipitin and the Kolmer complement fixation test. These observers found no increase in the percentage of serologic reactors during the period of mass vaccination or afterward. They also took specimens of blood from a series of 133 known nonsyphilitic subjects who had been vaccinated and tested them by the Mazzini, Kahn, Kolmer and V. D. R. L.[18] tests. They obtained 12 positive reactors, an incidence of 9 per cent. In only 1 instance did all four tests indicate positive reactions. In most of the other cases at least two, and often three, of the four tests gave negative reactions during the entire period of observation. The positive reactions were first obtained from seven to thirty-nine days after vaccination, with a median of fifteen days. The authors did not state how long the reactions of the blood remained positive; however, Lubitz [16c] and Favorite [16d] obtained false positive reactions as long as three and a half months after vaccination, and Lynch [16a] reported 1 case in which the reaction was positive one hundred and sixty-four

15. Barnard, R. D.: False Positive Blood Serological Tests for Syphilis Following Vaccination for Variola, Illinois M. J. **77**:78-79 (Jan.) 1940.

16. (*a*) Lynch, F. W.; Boynton, R. E., and Kimball, A. C.: False Positive Serologic Reactions for Syphilis Due to Smallpox Vaccinations (Vaccinia), J. A. M. A. **117**:591-595 (Aug. 23) 1941. (*b*) Thomas, G. E., and Garrity, R. W.: Routine Kahn Blood Reactions: Supplementary Report of Twenty Thousand Tests Made on Naval Recruits, with Observations on the Relationship of Cowpox Vaccination to the False Positive Test, U. S. Nav. M. Bull. **39**:272-276 (April) 1941. (*c*) Lubitz, J. M.: Serologic Reactions Following Smallpox Vaccinations, Am. J. Clin. Path. **13**:139-143 (March) 1943. (*d*) Favorite, G. O.: Factors Influencing False Positive Serologic Reactions for Syphilis Due to Smallpox Vaccination (Vaccinia), Am. J. M. Sc. **208**:216-223 (Aug.) 1941.

17. Rosenthal, T., and Widelock, D.: False Positive Serologic Tests for Syphilis Following Smallpox Vaccination, Am. J. Syph., Gonor. & Ven. Dis. **32**:365-369 (July) 1948.

18. The V. D. R. L. (Venereal Disease Research Laboratory, United States Marine Hospital, Staten Island 4) slide test is a microflocculation test for syphilis using cardiolipin-lecithin antigen (Harris, A.; Rosenberg, A. A., and Riedel, L. M.: Microflocculation Test for Syphilis Using Cardiolipin Antigen, J. Ven. Dis. Inform. **27**:169 [July] 1946).

days after vaccination. Rosenthal and Widelock[17] concluded that vaccination for smallpox is not an important factor in interfering with the serologic diagnosis of syphilis.

CONGENITAL DEFECTS

Considerable evidence has accumulated to indicate that trauma due to various factors experienced by a woman during her pregnancy may influence the viability or development of the fetus she carries. In the field of infectious diseases, the data best known are those originally presented by Gregg, of Australia, in 1941, and subsequently confirmed by others, indicating that the occurrence of rubella in the first trimester of pregnancy may cause congenital defects in the newborn infant. Congenital cataract, deafness and heart disease are among the commonest abnormalities found. There is some evidence that other infectious dis-

TABLE 5.—*Vaccination in Relation to Pregnancy in New York City, 1947*

	Mother Vaccinated					Mother Unvaccinated				
	Month of Pregnancy				Total	Month of Pregnancy				Total
Congenital Defect	1	2	3	4		1	2	3	4	
Clubfoot	1	1	3	..	5	..	2	5	..	7
Cleft palate	..	..	..	..	..	..	..	1	1	2
Harelip	..	..	2	..	2	..	..	1	1	2
Spina bifida	..	1	..	..	1	..	..	..	..	..
Missing digits	..	..	..	..	..	..	..	1	..	1
Extra digits	..	..	2	..	2	..	..	1	..	1
Congenital heart disease	..	..	..	..	..	..	1	..	..	1
Absence of ear lobe	..	..	..	..	..	1	..	..	..	1
Contracture of finger	..	1	..	..	1	..	..	..	..	..
Total	1	3	7	..	11	1	3	9	2	15

eases may play a similar role, and in these, also, the critical traumatic period is the first trimester of pregnancy. After vaccination against smallpox vaccinia virus enters the blood stream and is disseminated to the tissues of the body. The question has therefore arisen whether pregnant women should be vaccinated against smallpox, and, if they are, what the chances are of giving birth to a child with congenital defects.

Since about one fourth of all newborn infants in New York city are registered in the child health stations of the Department of Health, an opportunity was presented to examine these infants and compare the incidence of congenital anomalies in those born of women who were vaccinated during pregnancy with that for infants whose mothers were not vaccinated. In this study, I have had the assistance of Dr. Alfred Yankauer Jr. A similar and parallel study has been undertaken by Dr. Richard Ward and his associates at Dr. Emmett Holt's clinic at Bellevue Hospital. They have been following infants born in municipal hospitals. Since many of these infants will ultimately be registered

in the child health stations, the two studies overlap and are being carried on cooperatively.

The complete findings are not yet available. I am able, however, to give the results of the preliminary data which Dr. Yankauer and I have assembled from the examination of children in the health stations whose mothers were vaccinated during the first, second, third or fourth month of pregnancy and of a control group of infants born in the same months whose mothers had not been vaccinated. The infants were examined from one to three months after birth.

TABLE 6.—*Ratio of Defects to Each of First Four Months of Pregnancy During Which the Mother Was Vaccinated, and of the Whole Period, to Total Number of Children Examined, New York City, 1947*

Month of Pregnancy	Vaccinated Cases			Unvaccinated Cases		
	Live Births	Congenital Defects		Live Births	Congenital Defects	
		Number	Ratio		Number	Ratio
1	364	1	0.27	150	1	0.67
2	688	3	0.44	445	3	0.67
3	927	7	0.76	693	9	1.30
4	812	0	0.00	661	2	0.30
Total	2,791	11	0.39	1,949	15	0.77

TABLE 7.—*Relation of Two Congenital Defects to Vaccination During Pregnancy in New York City, 1947*

Congenital Defect	Vaccinated Mothers					Unvaccinated Mothers				
	Month of Pregnancy					Month of Pregnancy				
	1	2	3	4	Total	1	2	3	4	Total
Hydrocele and inguinal hernia	..	..	2	5	7	..	3	4	3	10
Hemangioma	..	5	2	4	11	3	3	5	2	14
Total	..	5	4	9	18	3	6	9	6	24

Table 5 lists the defects found in the child according to whether the mother was vaccinated during her pregnancy or not, and according to the month of pregnancy in which she was vaccinated. It may be noted that there is no case of congenital cataract and only 1 case of congenital heart disease in the two groups. Of the other defects listed, there was in the combined groups a total of 12 cases of clubfoot, 4 of cleft palate and harelip, 1 of spina bifida, 4 of missing and supernumerary digits, 1 of absence of an ear lobe, 1 of contracture and 1 of congenital heart disease. There was a total of 11 cases of congenital anomalies in the vaccinated group and 15 cases in the control groups.

The ratios of defects found for each of the four months, and for the total period, to the total number of children examined are given in

table 6. For the group whose mothers were vaccinated in the first month of pregnancy, the ratio is 0.27, as compared with 0.67 for the control group. For the groups whose mothers were vaccinated in the second, third and fourth months of pregnancy, the ratios are 0.44, 0.76 and 0.00, respectively, as compared with 0.67, 1.3 and 0.30 for the control groups. For all the infants, the ratio is 0.39 for the vaccinated group and 0.77 for the control group.

In table 7, I have listed two groups of common defects frequently observed in newborn infants: hydrocele and inguinal hernia, and hemangioma, both flat and raised. Here, too, the number and percentage of defects are greater in the control than in the vaccinated group. One must conclude from these preliminary findings that vaccination is a safe procedure during the first four months of pregnancy so far as the occurrence of congenital defects in the offspring is concerned.

SUMMARY

During April and May 1947, approximately 5,000,000 people were vaccinated in New York city. A random sampling of 25,295 of these persons indicated that 74 per cent had successful takes and were therefore susceptible to smallpox. There were observed 45 patients with postvaccinal encephalitis, a ratio of 1 to 110,000 vaccinations. There were 4 deaths; autopsies, performed on all, did not show the pathologic picture of postinfectious encephalitis. Of the patients who recovered, only 2 had residual pathologic signs; one, hemiparesis, and the other, optic neuritis. Forty-five patients had generalized vaccinia; 38 had a preexisting dermatosis, usually eczema. Of the 45 patients, 28 had not been vaccinated; all but 1 had been in intimate contact with some one recently vaccinated, and all but 1 were children under 5 years of age. Two infants died, both under 1 year of age; neither had been vaccinated, but both had been in intimate contact with a vaccinated person. Only 1 death occurred as a result of infection of a vaccination area, and no cases of tetanus were recorded. There occurred 9 per cent of false positive serologic reactions for syphilis in a group of 133 known nonsyphilitic subjects, but these did not offer difficulties in distinguishing them from true reactions. A preliminary study of infants born to women who were vaccinated in the first four months of pregnancy indicated no increase in the ratio of congenital defects as compared with that for a control group.

125 Worth Street.

ELECTROENCEPHALOGRAPHY OF THE NEWBORN

I. Studies on Normal, Full Term, Sleeping Infants

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WHEN Hans Berger first published in 1929 recordings of the electrical activity of the human brain, a new field of physiologic and clinical research was discovered. In the development and exploitation of the technic of electroencephalography, the great bulk of the investigative work has dealt with the use of the electroencephalogram in the diagnosis of convulsive disorders, the employment of the technic in the localization of cerebral lesions and studies for the establishment of normal patterns in various age groups. While Smith contributed a significant study of electroencephalographic patterns in the early neonatal period,[1] and he and Lindsley [2] studied normal tracings in infants past 2 months of age, little definitive work in a large series of infants in the first days of life has been done.

In the department of pediatrics of the University of Tennessee, 167 electroencephalographic tracings were obtained on 113 full term, apparently normal infants, ranging in age from 20 minutes to 6 days. The electroencephalograms obtained were studied from three particular points of view: (1) the age of the infants, (2) the respective leads employed and (3) the types of sedation, analgesia or anesthesia given

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1. Smith, J. R.: (*a*) The Electroencephalogram During Infancy and Childhood, Proc. Soc. Exper. Biol. & Med. **36**:384-386, 1937; (*b*) The Electroencephalogram During Normal Infancy and Childhood: I. Rhythmic Activities Present in the Neonate and Their Subsequent Development, J. Gen. Psychol. **53**:431-453, 1938; II. The Nature of the Growth of Alpha Waves, ibid. **53**:455-469, 1938; III. Preliminary Observations on the Pattern Sequency During Sleep, ibid. **53**:471-482, 1938. (*c*) Frequency Growth of Human Alpha Rhythms During Normal Infancy and Childhood, J. Psychol. **11**:177-198, 1941.

2. Lindsley, D. B.: (*a*) Brain Potentials in Children and Adults, Science **84**:354, 1936; (*b*) Electrical Potentials of the Brain in Children and Adults, J. Gen. Psychol. **19**:285-306, 1938.

to the mothers during labor and delivery. These tracings were divided into the following five groups: (1) those on infants whose mothers received no sedative, analgesic or anesthetic drug; (2) those on infants whose mothers were given caudal analgesia, with the assumption that no depressant drug reached the fetal circulation; (3) those on infants whose mothers received a barbiturate drug ("seconal sodium"); (4) those on infants whose mothers were given spinal anesthesia, and (5) those on infants whose mothers received various other types of drugs.

It is the purpose of this paper to present the data obtained from the first and second groups of tracings, namely, those on normal, full term infants born of mothers given no sedative or given caudal analgesia, the presumption being that no depressant drug reached the fetus. All infants reported on in the present communication weighed more than 2,500 Gm. (5 ½ pounds) at birth and appeared normal in all respects. There were no complications in the delivery of any of the infants, and the mothers were all in good health at the time of labor and delivery. All babies breathed spontaneously immediately on delivery and required no stimulant drugs or resuscitative efforts. Approximately two thirds of the infants were Negro, and one third were white.

A total of 72 infants on whom 82 electroencephalographic tracings were obtained constitutes the basis of the present report. Thirty mothers were given caudal analgesia without indication of sensitivity reactions, or drop in blood pressure or any abnormal manifestation. Forty-two mothers were delivered spontaneously without administration of any drugs, except for 8 who received a few breaths of ethylene and oxygen during the second stage of the delivery. The tracings obtained on the infants born of these 8 mothers did not differ from those of the infants whose mothers received no agent.

METHOD

A small room adjacent to the nursery was equipped for the electroencephalographic studies, in order to minimize the distance of transportation of the babies and to insure the least disturbance in their condition. The construction of the electroencephalographic cage and the precautions taken to insure valid tracings were according to standard procedures for electroencephalography.

A trained maid was employed to sit in the armchair within the cage and hold the baby on her lap. The baby's head was slightly below the electrode box and nearer to it than the head of the maid.

For the application of electrodes to the baby's head, a padded rubber band was placed under the baby's chin and extended upward in front of the ears (fig. 1).

Three rubber bands were connected to this chin band as shown in the photograph. Six electrodes, consisting of rivets indented at the tubular end, were applied to the head after electrocardiographic paste had been rubbed on the baby's scalp. The electrodes were placed in the following positions: (*a*) frontal electrodes at 6 cm. posterior to the supraorbital ridge and 2.5 to 3.0 cm. from the midline; (*b*) precentral electrodes at 4.5 cm. posterior to the frontal electrodes, slightly

anterior to an imaginary line joining the external auditory meatuses over the surface of the scalp, and 2.5 to 3.0 cm. from the midline; (*c*) occipital electrodes at 5.5 cm. behind the precentral electrodes and 2.5 to 3 cm. from the midline.

While the positions of the electrodes were constant with respect to surface landmarks, there were slight numerical variations from these exact measurements in infants with normal variation in head size.

Two reference "ear ring" electrodes were attached to the left and right ear lobes.

The machine used was an Offner (type "C" 144) four channel crystograph electroencephalograph.

In order to eliminate as much as possible any artefacts caused by muscular movements, all tracings were obtained while the infants were asleep. When the baby appeared to be soundly asleep and the electroencephalographic machine had been

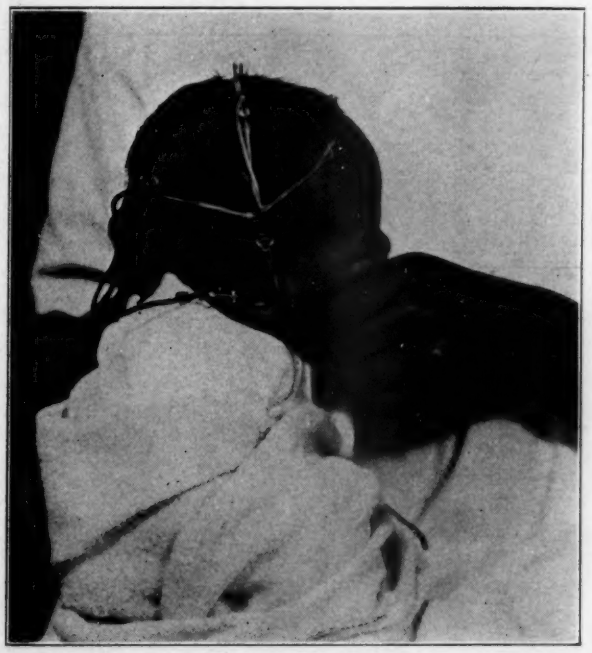

Fig. 1.—Photograph showing arrangement of rubber bands for placement of electrodes in electroencephalographic study of newborn infants.

calibrated, three "monopolar" and two "bipolar" runs were recorded. The monopolar leads were frontal, precentral and occipital, all three being grounded to the left ear. The bipolar leads were frontal-precentral and precentral-occipital.

During the time of the run both the technician and the maid watched the baby closely for any apparent change in general condition, undue tightness of the chin strap or any movement. All movements were marked immediately on the tracings. Runs were twenty minutes in length, although the time required to get a reliable twenty minute run was usually thirty minutes. It was found that the best time to make the electroencephalographic studies on sleeping infants was immediately after feedings.

When the tracings had been obtained, samples of capillary blood were taken at once for blood sugar determinations, and venous blood was drawn for calcium determinations. Only a few calcium determinations were made.

INTERPRETATION OF TRACINGS AND CALCULATION OF DATA

When the tracings were finished, the entire twenty minute run was studied to get a general picture of the character of the tracings from the various leads. Then a one minute sample of each run, a portion which seemed most representative of that particular tracing and which showed no evidence of movement, was analyzed in detail. The amplitude, frequency, rhythm and form of the various waves were studied. Frequency spectrums were made of each run in the entire one minute sample tracing, each individual wave being counted and plotted for frequency.

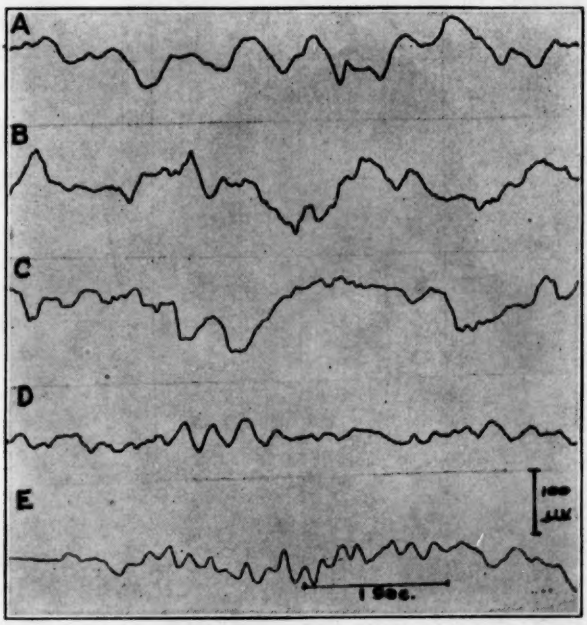

Fig. 2.—Five electroencephalographic tracings of normal, full term, sleeping infants whose mothers were given no sedative or analgesic drug during labor: *A* is the left frontal monopolar tracing of a child 7 hours old; *B* is the left precentral monopolar tracing of a child 7 hours old; *C* is the left occipital tracing of a child 9 hours old; *D* is the right frontal to right precentral bipolar tracing of a child 15 minutes old, and *E* is the left precentral to left occipital bipolar tracing of a child 20 hours old.

In the one minute sample, the percentage of time occupied by waves of each frequency was determined. The average percentage for each frequency was calculated, and a curve for percentage frequency was plotted for each of the five electroencephalographic runs employed, according to the method of Dr. Hudson Jost.[3] Standard deviation

3. Jost, H.: Unpublished data.

curves were also plotted on the same graphs. Graphs showing percentage frequency were constructed for each day of life from the first through the sixth, each lead on each day having a separate graph.

RESULTS

The electroencephalograms obtained in this series of infants are presented graphicallly in two ways: (1) by reproductions of actual tracings (figs. 2 and 3), and (2) by a series of graphs of percentage frequency curves (figs. 4 to 8). The graphs of frequency curves for only the first day of life are presented in this communication.

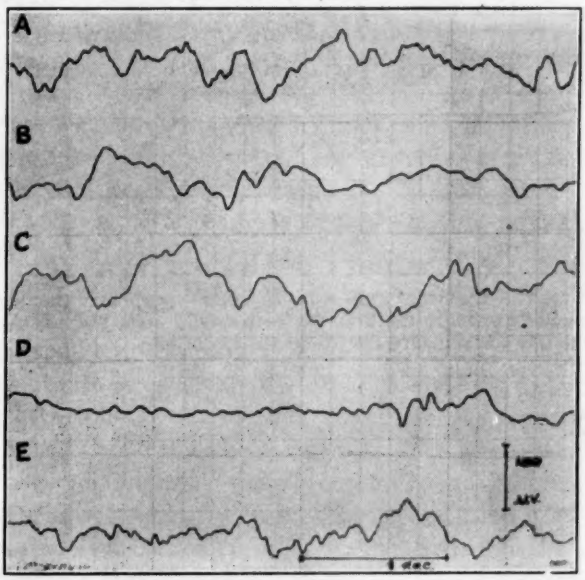

Fig. 3.—Five electroencephalographic tracings of normal, full term, sleeping infants whose mothers were given caudal analgesia during labor: *A* is the right frontal monopolar tracing of a child 16 hours old; *B* is the left precentral monopolar tracing of a child 4½ hours old; *C* is the left occipital monopolar tracing of a child 1 hour old; *D* is the right frontal to right precentral bipolar tracing of a child 16 hours old, and *E* is the right precentral to right occipital bipolar tracing of a child 16 hours old.

Figure 2 shows representative electroencephalographic tracings taken within the first twenty-four hours of life on normal, full term infants delivered spontaneously without maternal sedation. Figure 3 is a reproduction of representative tracings obtained within the first twenty-four hours on full term, normal infants delivered with the use of caudal analgesia. The close similarity of the two groups of electroencephalograms, which is apparent on study of these two composite sets of tracings, was borne out in the entire series of 30 babies delivered with the use of caudal analgesia and 42 delivered spontaneously without

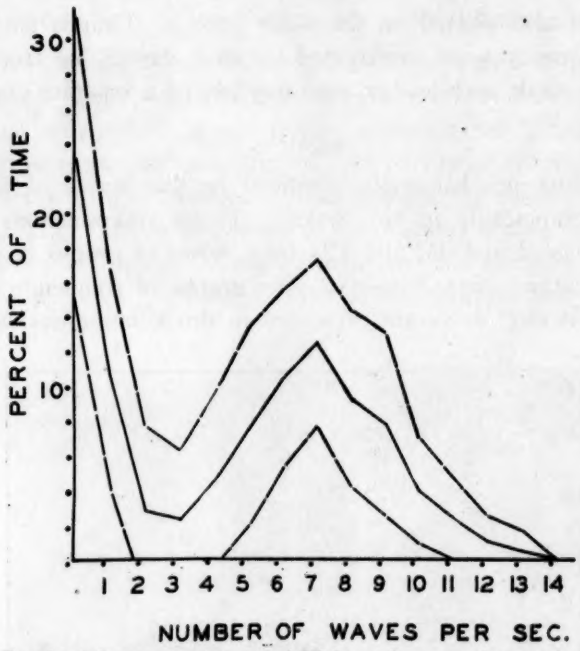

Fig. 4.—Graph of frequency curves of 27 frontal monopolar tracings of normal, full term, sleeping infants in the first day of life. The solid line indicates the mean and the broken line the standard deviations for frequencies.

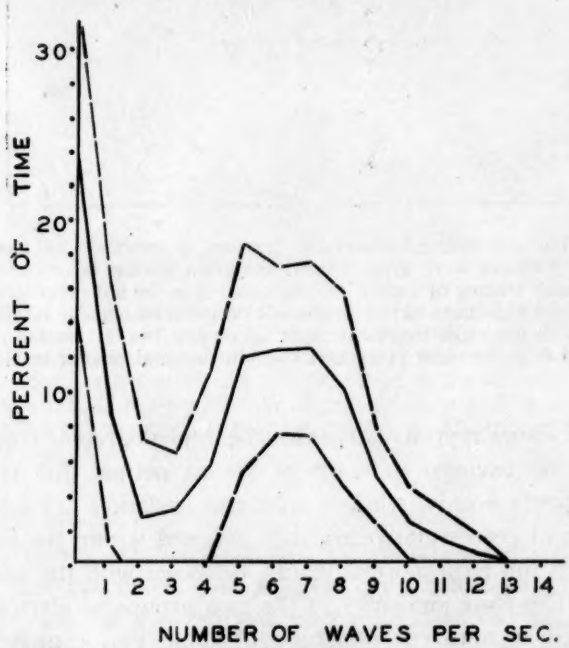

Fig. 5.—Graph of frequency curves of 26 precentral monopolar tracings of normal, full term, sleeping infants in the first day of life. The solid line indicates the mean and the broken lines the standard deviations for frequencies.

maternal sedation. The fact that the tracings obtained from babies born spontaneously without maternal sedation were practically identical with those obtained from infants born of mothers given caudal analgesia led us to place these two types of infants into a so-called normal, full term group. However, close study of the tracings of the two groups shows minor differences which will be discussed later.

In both "caudal" and "spontaneous" babies, the most noticeable differences were those between the monopolar and bipolar runs. Four chief differences were seen: (1) the monopolar runs exhibited much more wandering of the base line; (2) the monopolar runs showed more dysrhythmia; (3) the precentral-occipital bipolar runs showed short bursts suggestive of alpha activity, and (4) the frontal-precentral bipolar runs showed evidence of delta rhythm in some of the tracings.

In both "caudal" and "spontaneous" babies, beta activity was superimposed on the wandering base line. This was slightly more prominent in babies born spontaneously without any maternal agent than in those delivered with the use of caudal analgesia. In both groups of infants there were infrequent bursts of alpha and delta activity in the monopolar runs. There was a slightly increased tendency toward bursts of alpha activity in the "caudal" babies as compared with the other babies. In general, the "caudal" tracings were slightly less dysrhythmic than those of the "spontaneous" group.

In all the electroencephalographic tracings obtained for both groups of infants, the amplitude was low in comparison to the amplitude of tracings obtained beyond the neonatal period. The greater the frequency of waves per second, the lower was the amplitude in the normal tracings.

As the graphs of frequency curves illustrate in all the leads employed, two distinct peaks of frequency occur in the electroencephalograms of normal, full term, sleeping infants. At the left side of the graphs where the slow random waves are plotted, a frequency peak of waves of 1 to 2 per second is apparent. A drop in frequency then occurs, so that waves of 2 to 4 per second are less common. The second peak begins with frequencies of 5 to 10 per second. Then the curve begins to fall, illustrating that waves of 11 to 14 per second are infrequent. It is common for waves of 5 to 14 per second to be superimposed on slow random waves of moderate to slightly high amplitude, when waves of 50 microvolts are regarded as moderately high.

COMMENT

Our observations on electroencephalograms of the normal, full term, sleeping infant in the first days of life are essentially in agreement with the initial study of Smith,[1] who reported on a smaller series of infants.

We wish to emphasize that the present communication deals only with newborn infants who were judged to be soundly asleep and who

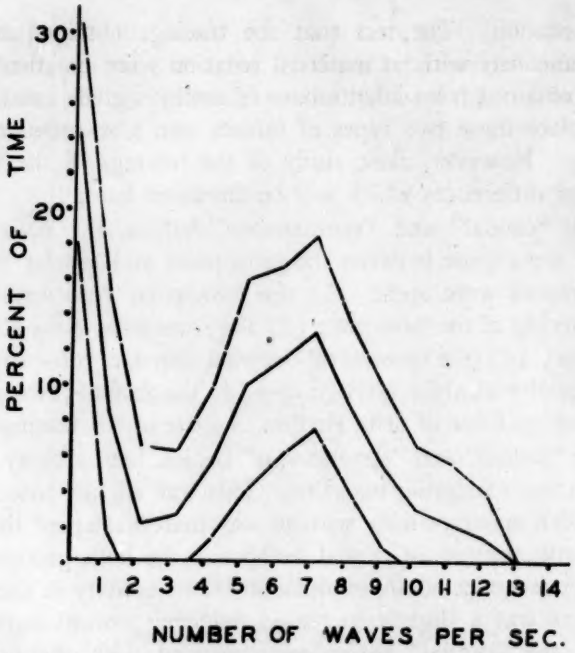

Fig. 6.—Graph of frequency curves of 25 occipital monopolar tracings of normal, full term, sleeping infants for the first day of life. The solid line indicates the mean and the broken line the standard deviations of frequencies.

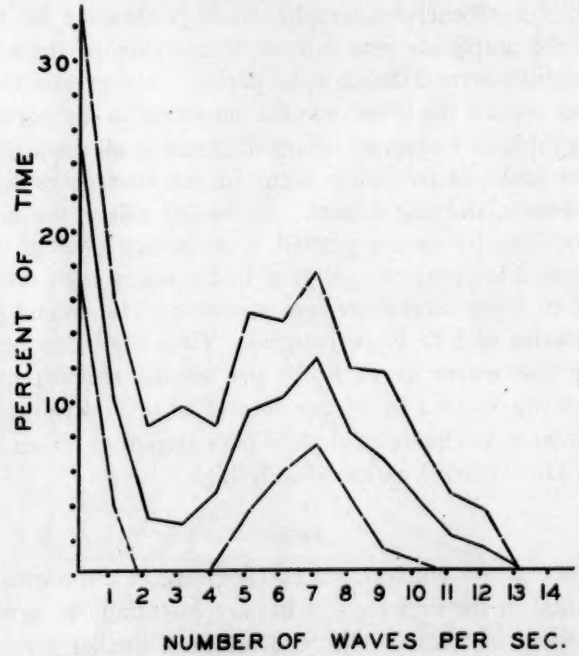

Fig. 7.—Graph of frequency curves of 26 frontal-precentral bipolar tracings of normal, full term, sleeping infants in first day of life. The solid line indicates the mean and the broken line the standard deviations for frequencies.

had just been fed. The clinical estimation of the depth of sleep in a newborn infant is not exact, and we are aware that various depths of sleep in different infants might make alterations in the electroencephalographic patterns. However, since all our tracings in this study were so similar, it is hardly likely that there were significant differences in depth of sleep in the babies whose brain waves we studied. Additional observations are being made on infants whose tracings are taken as they go to sleep, as they remain asleep and as they awake. Such data are necessary in order to make it easier to interpret electroencephalograms on newborn infants who are not soundly asleep. The matter of making tracings on them only when they are soundly asleep is a time-consuming and difficult chore.

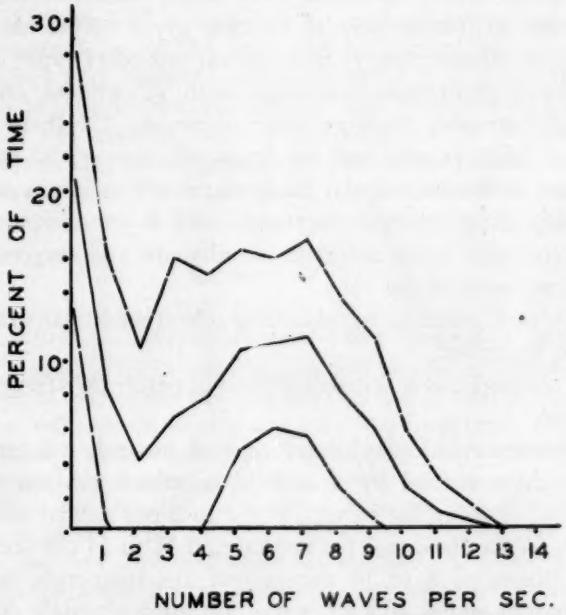

Fig. 8.—Graph of frequency curves of 27 precentral-occipital bipolar tracings of normal, full term, sleeping infants in first day of life. The solid line indicates the mean and the broken line the standard deviations for frequencies.

The fact that all the infants reported on in this study had just been fed probably accounts for the fact that in 100 consecutive blood sugar determinations done at the end of the electroencephalographic runs the values ranged from 48 to 130 mg. per hundred cubic centimeters of blood. Likewise, results of calcium determinations on a smaller series of infants were normal.

This study has been limited to newborn infants in the first week of life; therefore, a consideration of developmental patterns, such as growth of the alpha waves, is beyond the scope of the present communication.

In general, however, it can be said that our observations confirm the fact that the functional development of the human brain in the first days of life is immature. From the standpoint of cortical electrical activity, the prominent dysrhythmia of the tracings gives evidence of lack of functional organization. In brief, not only is the baby immature but his brain waves are also immature.

SUMMARY AND CONCLUSIONS

Electroencephalograms were obtained on 113 normal, full term, sleeping infants in the first days of life. The tracings were grouped into those on infants whose mothers were given no sedative or analgesic agent, those on infants whose mothers were given caudal analgesia, those on infants whose mothers were under sedation with "seconal sodium," those on infants born of mothers given spinal anesthesia and those on infants whose mothers received various other types of drugs.

The present communication deals with 72 infants on whom 82 electroencephalographic tracings were obtained. Of these infants, 34 were born of mothers who had no drugs whatsoever, 30 were born of mothers given continuous caudal analgesia, in whom it was assumed that no depressant drug reached the fetus, and 8 were born of mothers who had extremely small amounts of ethylene and oxygen for a few minutes before birth of the baby.

Methods and technics of obtaining electroencephalograms on the neonate are described.

Sample tracings and a series of graphs of percentage frequency curves are presented.

The electroencephalographic patterns of normal, full term, sleeping infants are characterized by a lack of sustained rhythm and by two peak frequencies occurring in waves of 1 to 2 per second and of 5 to 10 per second. Waves of 2 to 4 per second and 11 to 14 per second are less frequent. Waves of 5 to 14 per second are frequently superimposed on large random waves which often attain approximately 50 microvolts in amplitude. In general, the higher the frequency of the waves the lower the amplitude, and the amplitude of the waves in the newborn is less than that encountered in older infants, children and adults.

These observations give objective evidence from the electrical standpoint of the functional cortical immaturity known to exist in the newborn.

Dr. T. S. Hill, professor of psychiatry, University of Tennessee College of Medicine, and director, Gailor Psychiatric Hospital, and Dr. Hudson Jost, assistant professor of psychiatry, and director, Psychophysiological Laboratories, Gailor Psychiatric Hospital, assisted in this study.

20 South Dunlap Street (3).

Case Reports

HEMANGIOMA (CAPILLARY AND CAVERNOUS) WITH THROMBOPENIC PURPURA

Report of a Case with Observations at Autopsy

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AND
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THROMBOPENIC purpura is an unusual complication of extensive hemangioma of the skin. Only 2 cases have been reported, 1 by Kasabach and Merritt,[1] which occurred in a 2 month old infant, and 1 by Rhodes and Borrelli,[2] which was first observed in an infant at the age of 3½ months.

The present report concerns a case of cavernous and capillary hemangioma in which thrombopenia was first noted at the age of 20 months. The condition was rapidly progressive and terminated fatally.

REPORT OF CASE

First Hospital Entry, Sept. 7, 1945.—S. R., a 14½ month old girl, was first seen at the University of California Hospital with a complaint of "vascular tumors."

At birth, a small, elevated, vascular area had been noted behind the right ear, and by the age of 3½ months this lesion had doubled in size. It was treated with applications of solid carbon dioxide and promptly disappeared. However, within two weeks, similar isolated superficial hemangiomas appeared on the face and abdomen. These also responded promptly to treatment with solid carbon dioxide. When the infant was 5 months old, a diffuse, racemose type of angioma suddenly developed on the center of the upper back. At first this area was flat and brownish, but within a few days it became bright red and began to spread over the back. During the ensuing month, the patient received four roentgen-ray treatments,[3] with decided, though temporary, recession of the hemangiomatous mass. At the age of 9 months, a deep subcutaneous purple nodule developed in the left supraclavicular

From the Departments of Pediatrics, Medicine and Pathology of the University of California Medical School.

1. Kasabach, H. H., and Merritt, K. K.: Capillary Hemangioma with Extensive Purpura: Report of a Case, Am. J. Dis. Child. **59**:1063 (May) 1940.

2. Rhodes, A. W., and Borrelli, F. J.: Giant Hemangio-Endothelioma with Thrombocytopenic Purpura: Results of Roentgen Therapy, Am. J. Roentgenol. **52**:323 (Sept.) 1944.

3. Roentgen ray therapy was given by Dr. E. C. Haag, of Sacramento, Calif., as follows: On Dec. 14, 1944 an area about 15 cm. in diameter on the center upper back was treated with 120 r, 3 mm. of aluminum filtration and 140 kilovolts. This treatment was repeated on December 19. On December 27, 80 r and 3 mm. of aluminum filtration was administered to the same site. A roentgen ray treatment of 80 r, 1 mm. aluminum filtration and 105 kilovolts was given on Jan. 24, 1945.

region. This lesion became progressively larger, and its growth was not affected by a roentgen-ray treatment given at the age of 11 months.[4]

The general health of the child had been excellent and her growth and development normal. The mother had noted that the child seemed to bruise easily, but there was no history of abnormal bleeding.

The family history was noncontributory. The mother's pregnancy had been normal.

Physical Examination.—The child was well developed and fairly well nourished. She was not acutely ill. Her temperature was 99.3 F. She was 30¼ inches (76.8 cm.) long and weighed 19½ pounds (8.9 kilograms). A pale, oval, soft scar was present behind the right ear. The skin over most of the upper back was mottled and brownish pink and did not blanch on digital pressure. There was extensive capillary

Laboratory Findings During S.R.'s Three Stays in the Hospital

Date	Hemoglobin Concentration, per Cent	Red Blood Cells, per Cu. Mm.	White Blood Cells, per Cu. Mm.	Filament-Nonfilament Cell Ratio	Basophils, per Cent	Leukocytes, per Cent	Monocytes, per Cent	Platelets, per Cu. Mm.	Time in Minutes: Bleeding *	Time in Minutes: Clotting
First Stay in Hospital:										
9/14/45	86	5,000,000	11,000	20:8	2	63	7	.....	....	....
Second Stay in Hospital:										
12/14/45	74	4,000,000	6,700	15:18	2	65				
12/17/45	..	.....	.....	.....	..	..	..	260,000	2⅛	2½
12/19/45	90	4,220,000	8,650	34:30	..	36				
12/20/45	..	.....	.....	.....	..	..	..	252,000		
Third Stay in Hospital:										
2/26/46	70	3,190,000	12,150	39:24	2	30	5			
2/27/46	..	.....	.....	.....	..	..	..	42,000	20	5
2/28/46	..	.....	.....	.....	..	..	..	.....	8¾	
3/ 1/46	..	.....	.....	.....	..	..	..	37,200	13	3
3/ 2/46	65	3,150,000	12,700	19:26	..	50	5	34,000	15	2½
3/ 4/46	..	.....	.....	.....	..	..	..	50,000		
3/ 7/46	Transfusion: 125 cc. fresh whole blood				..	..	..	130,000		
3/ 8/46	54	2,420,000	14,600	.....	..	..	..	180,000	10	4½
3/ 9/46	46									
3/ 9/46	Transfusion: 125 cc. fresh whole blood									
3/ 9/46	76	.....	.....	.....	..	..	..	218,000		
3/10/46	62									
3/11/46	58	.....	.....	.....	..	..	..	32,000	12½	3

* The bleeding time was estimated by the method of Duke. The coagulation time was determined by the fine capillary tube method. The blood of this patient was type IV, Rh negative. The reactions to the tuberculin test (1:1,000 dilution) and the Schick test given Dec. 14, 1945, were negative.

and sinusoidal dilatation of the skin of both shoulders and of the upper back. In the left supraclavicular region there was a raised purplish area which was soft and "doughy," but no bruit could be heard over it. The anterior part of the thorax was normal, but posteriorly the upper left side appeared fuller than the right, and the left shoulder was elevated.

The child was seen by Dr. Frances Torrey, of the Department of Dermatology, who considered the lesions to be characteristic of a capillary and cavernous hemangioma of the racemose type, and apparently composed of an adult type of tissue. It was the opinion of the surgical consultant (Dr. H. G. Bell) that removal of the lesion was not indicated. A roentgenogram of the chest showed no significant abnormality of the lungs nor any definite change in the bones.

The blood count was essentially normal (table).

4. On June 15, 1945 a treatment of 120 r with 1 mm. of aluminum filtration was given to the left supraclavicular area.

Second Hospital Entry, Dec. 14, 1945.—At the age of 18 months, the patient reentered the hospital because of sudden extension of the lesion in the left supraclavicular area. On the day previous she had vomited once; her temperature had been elevated to 102 F., and she had had some pain in the back.

On entry to the hospital, the patient's temperature was 99.3 F. Several small, hard, discrete lymph nodes were palpated in the anterior and posterior cervical regions and in both axillas. There was an area of bluish purple discoloration which included the supraclavicular regions, axillas, medial aspect of the upper arms and the back from the hair line to the lower thoracic region. The left supraclavicular area was swollen, tense and slightly tender to palpation. On inspiration the liver was palpable 1 cm. below the right costal margin. A small lesion similar to those in the skin was noted along the posterior commissure of the vagina.

On the following day, the rash of exanthema subitum developed, and, as the maculopapular eruption associated with this disease cleared, there appeared to be a decrease in the extent of the cavernous lesion and some clearing of the capillary lesions.

The bleeding and clotting times were normal, and two platelet counts were within normal limits. The vitamin C level was 0.99 mg. per hundred cubic centimeters. Roentgenograms of the long bones, pelvis, thoracolumbar portion of the spine, bony thorax, and heart and lungs were within normal limits. The Wassermann, Schick and tuberculin reactions were negative.

Third Hospital Entry, Feb. 26, 1946.—At the age of 20 months the patient again entered the hospital. She had been relatively well for about two weeks after discharge from the hospital, when the involved areas of the skin had become edematous and darker in color, and she had become restless, irritable and showed signs of insomnia and anorexia. She had had a temperature of 101 F. for one day.

Since the previous entry, the skin over the back, shoulders, supraclavicular fossae and the left axilla had assumed a more intense reddish purple discoloration and had become swollen, tense and tender. This change in the appearance of the skin was apparently due to hemorrhage from the hemangiomas. There were several ecchymoses on the legs and a few petechiae on the face and over both tonsils. A harsh, well localized systolic murmur was heard in the third left interspace. The spleen was palpated under the left costal margin on several occasions, and the edge of the liver descended 1 cm. below the right costal margin. Neither the spleen nor the liver was tender. There was pitting edema of both legs.

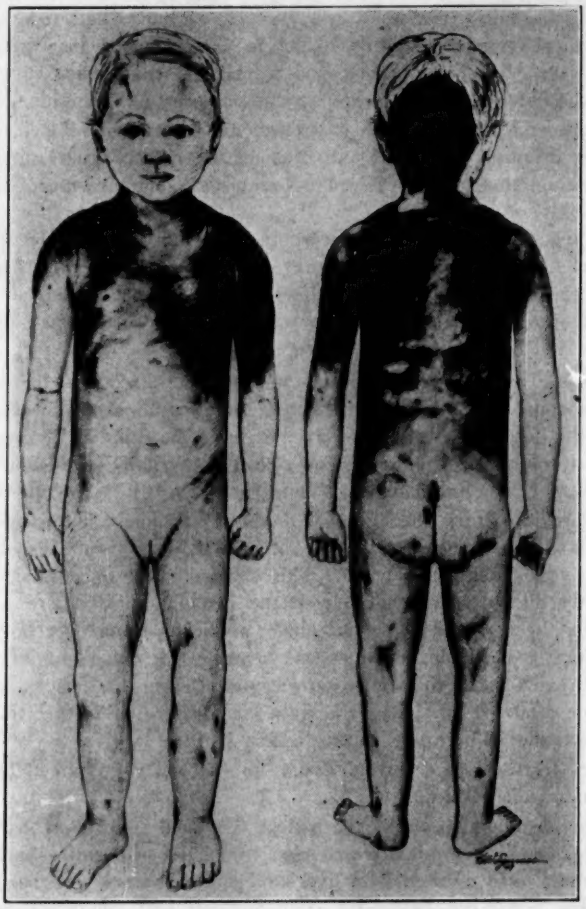
Laboratory tests revealed thrombopenia, an extremely prolonged bleeding time and moderate anemia (table).

During the ensuing two weeks the patient remained afebrile. However, the discoloration and swelling gradually extended to include the entire back and chest and the left arm (see figure). The liver and spleen became progressively larger (palpable 3 cm. and 2 cm. below the right and left costal margins, respectively). Percussion dulness and suppressed breath sounds were perceptible over the left side of the chest, and the area of cardiac dulness was shifted to the right. A roentgenogram showed a homogeneous density of the left side of the chest, which was interpreted as indicating a hemothorax.

The child showed some temporary improvement in her blood picture following two transfusions of 125 cc. of fresh whole blood each but continued to do poorly; her pulse rate increased, her respirations became rapid and she died on March 11, 1946.

Autopsy Observation.—Gross Observation: General: The body was that of a fairly well developed and nourished white female infant, weighing 35 pounds (15.9 Kg.) and measuring 33 inches (84 cm.) in length. The skin over the neck to the

level of the hair line, the shoulders, the left arm to the region of the elbow and the right arm to the insertion of the deltoid muscle, the entire thorax and the abdomen to the level of the umbilicus was bluish red, of various shades and intensities. In some areas, particularly over the left shoulder and along the right paravertebral line, there were dark blue tortuous markings which appeared to be formed by vascular channels. Numerous small petechiae were present in the involved area. The skin of the face, neck, scalp, the chest anteriorly and posteriorly, the shoulder



Drawing of S. R. made during last stay in the hospital showing the extent of cutaneous involvement in hemangioma with thrombopenic purpura.

region, the entire left arm and the right arm to the region of the elbow was extremely swollen and tense. In the supraclavicular area there were numerous petechial hemorrhages but no recognizable angiomas.

Head: The head was symmetric except for a slight depression of the left occipital bone.

Brain: The brain weighed 1,032 Gm. No hemorrhages were seen in the meninges or at the base of the brain. The blood vessels were intact. The pituitary gland was normal in size and appearance.

Eyes: The eyes were examined for angiomatous formations, and none were observed.

Thorax: The thorax was symmetric. The left pleural cavity contained approximately 800 cc. of bloody fluid. An area of 100 sq. cm. of the parietal pleura in the axillary region was slightly reddened and roughened, giving the appearance of an hemorrhagic pleuritis. In this region there was considerable hemorrhage in the intercostal tissues. The right pleural cavity contained approximately 300 cc. of serosanguineous fluid. The intercostal veins in the lower thoracic region were tortuous and greatly dilated.

Thymus: The thymus weighed 4 Gm. It was somewhat thickened by edema of its stroma.

Heart: The heart weighed 34 Gm. The pericardial fluid was not increased, and no adhesions were present. The heart was of normal shape and size but was shifted to the right by fluid in the left thoracic cavity. Several small subepicardial petechial hemorrhages were present. The myocardium and endocardium were normal. On the anterior leaflet of the mitral valve, there was a slightly raised yellowish gray atheromatous plaque, approximately 2 mm. in diameter.

Lungs: The right lung weighed 82 Gm. The lobar pattern was normal and the pleura smooth. Several small subpleural petechial hemorrhages were noted in the interlobar fissure. The parenchyma was congested, particularly in the posterior portion, and there were scattered areas of atelectasis. The left lung weighed 72 Gm. and was markedly collapsed by bloody fluid in the left thoracic cavity. The pleura was smooth. Several small petechial hemorrhages were seen in the interlobar fissure.

Mediastinum: The lymph nodes at the bifurcation of the trachea and in the region of the hili were normal. Those in the superior mediastinum and in the inferior portions of the neck were slightly enlarged and contained sanguineous material within the parenchyma. Both portions of the diaphragm were lowered, the right being at the sixth intercostal space anteriorly and the left at the seventh intercostal space anteriorly.

Liver: The liver weighed 500 Gm. Its edge extended 7 cm. below the right costal margin. The capsule was smooth, and no petechiae or angiomas were seen beneath its surface. The parenchyma appeared normal.

Spleen: The spleen weighed 25 Gm. It was elongated and of uniform, firm consistency. The malpighian corpuscles were approximately 1 mm. in diameter and were prominent. The pulp was of firm consistency and reddish purple.

Gastrointestinal tract: The gastrointestinal tract was normal throughout.

Adrenal glands: The right adrenal gland weighed 3 Gm. and the left 2.5 Gm. Both were normal in size, shape and consistency.

Kidneys: The right and left kidneys each weighed 22 Gm. Both appeared normal.

Genitourinary tract: The urinary tract and the genitalia were normal.

Bone marrow: The bone marrow of the thoracic and lumbar vertebrae, the ribs and the sternum presented no gross abnormalities.

Microscopic Examination: Skin. Neoplastic growths were observed in the dermis, the subcutaneous fatty tissue and in the underlying muscles in sections removed from the anterior and posterior parts of the thorax and neck, both shoulders and one upper arm. The lesions were composed of small endothelium-lined spaces, the larger of which were frequently filled with blood, whereas the smaller ones contained no erythrocytes. There were occasional lesions composed of solid sheets of endothelial cells. The cells showed slight pleomorphism, but mitoses were infrequent. There was a moderate amount of hemorrhage into the surrounding tissues. This was more apparent in the region immediately beneath the epidermis.

Striated muscles: Endothelium-lined spaces varying from 7 to 50 microns in diameter, which were usually filled with blood, were noted throughout the muscles of the neck, shoulders, chest and upper arm. Occasionally, small groups of cells possessing no lumen were observed. The cells were usually elongated, with a scanty cytoplasm and an indented nucleus containing a uniform, finely dispersed chromatin network. At times, two small nucleoli could be discerned. There was considerable hemorrhage in the region of the invading tumor. The growths extended through the depth of the intercostal muscles to the surface of the parietal pleura.

Lymph nodes: The lymph nodes in the cervical and axillary regions were uniformly involved by the neoplastic process. The capsule was usually intact, but occasionally it contained large endothelium-lined channels, some of which were cavernous in size. The walls were usually composed of fibrous tissue, but occasionally they contained elements of smooth muscle. Nodes in the subcapsular region showed a clear area which sometimes contained small endothelium-lined channels, forming a lace-like pattern. The channels were usually filled with a clear, pink-staining material, but some contained erythrocytes. There were few germinal centers present. The sinusoids of the cortex were dilated and occasionally showed a similar proliferation of smaller endothelium-lined channels. In the medulla, these channels were larger, had thicker walls and were usually filled with lymphocytes. There was a moderate degree of myeloid metaplasia, consisting of many large undifferentiated cells, megakaryocytes, erythrocytes, normoblasts and primitive myeloid cells. In the connective tissue about the lymph nodes there were prominent aggregates of cavernous endothelium-lined structures. These varied in size and shape and were filled with erythrocytes.

Heart: The endocardium and myocardium were normal. There was slight hemorrhage beneath the visceral pericardium. The coronary vessels were normal.

Lungs: There was moderate edema of the lungs, and occasional hemorrhages were present in the subpleural region. The parenchyma of the left lung was completely collapsed, but there was no evidence of inflammation. There was patchy atelectasis of the right lung, associated with generalized emphysema. The alveolar walls were thin, with moderately prominent capillaries. In some of these capillaries, cells resembling megakaryocytes were seen. These contained a single, large, hyperchromatic multilobulated nucleus or, occasionally, multiple nuclei.

Liver: The capsule was normal. The lobules were of approximately normal size. The hepatic cells forming the cords of Billroth were frequently increased in size due to an accumulation of finely granular and occasionally vacuolated material, presumably glycogen, within the cytoplasm.

Spleen: The capsule was normal. The trabecular pattern was prominent. Malpighian corpuscles faded imperceptibly into the surrounding red pulp, which showed prominent endothelial cells and sinusoids. The sinusoids were full of blood, much of which stained poorly. There was a slight increase of formed blood elements, including many neutrophils within the sinusoids.

Thyroid gland: The thyroid gland was normal except for one area of the capsule which had been invaded by the angiomatous growth.

Trachea: The trachea adjacent to the thyroid showed a chronic inflammatory reaction in the submucosa associated with hemorrhage into the surrounding interstitial tissues.

Bone marrow: The bone marrow was extremely hyperplastic. The cellular elements obliterated all fatty tissue. The erythropoietic centers were particularly prominent. These were uniformly spaced and were composed principally of immature cells. The number of megakaryocytes was increased, and they were usually of the

agranular type. The myelopoietic centers likewise showed an increase of immature forms.

Diagnosis: 1. Capillary and cavernous hemangioendotheliomas involving the skin, subcutaneous tissues, striated muscles, lymph nodes, capsule of the thyroid and parietal pleura. 2. Idiopathic thrombopenic purpura with (*a*) hyperplasia of abnormal megakaryocytes in the bone marrow; (*b*) erythropoietic hyperplasia of the bone marrow; (*c*) myeloid metaplasia of the lymph nodes. 3. Hemothorax with (*a*) atelectasis of the lung and (*b*) depression of the diaphragm.

COMMENT

The association of capillary hemangioma with thrombopenic purpura is of interest because of the possible close relationship between the two conditions. Both of the previously reported cases of this syndrome occurred during the first few months of life. Whether the thrombopenia was congenital or acquired, or whether it was "idiopathic" or secondary to the capillary defect, was not known. In our case, the thrombopenia was not congenital, since the platelet count was within normal limits as late as the eighteenth month of life.

Three conflicting theories have been advanced to explain the low platelet count in thrombopenic purpura: (1) increased phagocytosis of the platelets by the spleen and other reticuloendothelial tissues; (2) increased utilization of platelets in an attempt to repair multiple capillary defects, and (3) decreased production of platelets by the megakaryocytes in the bone marrow.

It is impossible to determine the exact origin of the thrombopenia in our case. The presence of widespread capillary defect might suggest increased utilization of platelets as the cause. However, this explanation seems unlikely in view of the fact that thrombopenia was not observed before the eighteenth month of life, despite the presence of the vascular defects since birth, and the fact that thrombopenia has seldom been seen in association with other cases of advanced capillary hemangioma. Furthermore, the observation of an increased number of agranular megakaryocytes in the bone marrow suggests that the thrombopenia was due to the failure of these cells to produce a sufficient number of platelets. The microscopic picture of the marrow excludes the possibility of aplasia due to roentgen irradiation.

Despite the irradiation treatment of our patient's hemangioma during the first few months of life, there was no appreciable effect on the rate of spread of the lesion. Kasabach and Merritt used roentgen irradiation plus radium, while Rhodes and Borrelli treated their patient with roentgen rays alone, and in both instances the patient recovered.

Boyd [5] classified hemangiomas of the skin as capillary and cavernous. The former type consists of a network of newly formed capillaries which are filled with blood. The neoplasm, however, affects only one segment of a vessel, from which buds of endothelium grow out and form new vessels. The endothelial cells of this type of hemangioma may be several layers in depth, and endothelial proliferation may be so great that the lumen of the vessel is occluded and solid masses of cells are formed.

5. Boyd, W.: A Text Book of Pathology: An Introduction to Medicine, ed. 4, Philadelphia, Lea & Febiger, 1943, p. 284.

The more adult type of hemangioma, the cavernous, which is less sensitive to radiation, is composed of large, irregular, widely dilated sinusoids lined by endothelium. The predominance of the cavernous type of hemangioma in our patient may account for the lack of response to roentgen irradiation.

SUMMARY

A case of fatal extensive capillary and cavernous hemangioma associated with thrombopenic purpura in a 21 month old infant is reported. The thrombopenia did not appear until the child was between 18 and 20 months of age. Roentgen therapy during the first year of life was not successful in the treatment of the hemangioma.

The possible relationship of the damaged capillaries of the hemangioma to the production of thrombopenia is discussed.

Complete autopsy observations are reported.

Medical Center (22).

Progress in Pediatrics

PEDIATRIC TEACHING FACILITIES

Actualities and Hope

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I AM PLEASED that this society allows time for a symposium such as the one we are planning this afternoon, not so much for what we may accomplish in reaching decisions, as to emphasize the importance of pediatric education and its complete interlocking with the matters of research with which this society is more generally concerned.

I think it is clear why the survey of the American Academy of Pediatrics was undertaken. The people of our country have completely accepted the idea that they and their children have a right to medical care. They are demanding this care more and more and are taking steps, many of which are naïve, to get it. Since the demand for medical services in pediatrics is obviously increasing by leaps and bounds, in spite of the fact that the actual amount of severe illness is being reduced, it is apparent that pediatrics must meet this demand and that, therefore, the technics and the facilities for the education of future physicians have become matters of national importance and of political significance. We who are engaged in pediatric education must take energetic steps to improve our work in order to take care of the increased demand that is being made on us. It is rather obvious that the people and the federal government soon will assume that it is a matter for governmental concern for us to do so. I personally think it is already a matter that requires governmental support.

Although the survey of facilities for pediatric education being conducted by the American Academy of Pediatrics is well under way and more than half the medical schools have been visited, far less than half the work is completed. I am sorry that I cannot present to you anything like a complete summary at this time. Dr. John

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This paper and the papers by Dr. Weech, Dr. McIntosh, Dr. McQuarrie and Dr. Davison following it were read at the Symposium on Undergraduate Medical Education in Pediatrics, presented on May 13, 1947, at the Fifty-Seventh Annual Meeting of the American Pediatric Society, Stockbridge, Mass. The symposium represented the results of a survey of child health services, which included a study of pediatric teaching in American medical schools, under the chairmanship of Dr. James L. Wilson.

P. Hubbard, who is more intimately engaged in the work than I, is here today, and possibly you may wish to learn more from him. I have certain bits of information, however, which I think give a sketchy idea of what is happening in American centers of pediatric teaching.

Of the 70 chairmen of departments of pediatrics in the 70 medical schools, only 39 are members of the American Pediatric Society. Of the full time teachers of all grades in 31 schools from which we now have data, only 11 per cent are members of the American Pediatric Society; only a little over 30 per cent of them are members of the American Academy of Pediatrics. You may speculate on the significance of the fact that only 29 out of 70 of the full professors of pediatrics belong to this organization. We might, in our conceit, consider that the 31 medical schools not represented here are unimportant, but I can assure you that these 31 medical schools, all busily turning out physicians who are going to have the health of the children of the nation in their hands, are exceedingly important. This society, if it is interested in the general health of the children of this country, must be tremendously concerned about these resources and facilities.

From the data obtained in 11 states, we learn that the proportion of physicians who have had no hospital training in pediatrics whatever varies from 8 to 28 per cent, depending on whether the figures are from urban or from rural regions. Of the general practitioners, 45 per cent have had less than one month of pediatric training, and 40 per cent of all the visits of general practitioners to children are made by men with less than one month's hospital training in pediatrics. One quarter of the pediatricians who so list themselves have had less than one year's training.

From the catalogue hours listed for 27 medical schools, we learn that, on an average, 8.5 per cent of the time in the third year of medical school and 13.5 per cent of the fourth year is spent in pediatrics. Data from almost half the schools showed that an average of 5½ full time men work in pediatric departments, but 5 of these schools have more than 15 men each, and 8 had no full time man at all.

I can give you a quick, but incomplete, glance at the financial support of the departments of pediatrics. In 17 schools the departments of pediatrics take up 5.5 per cent of the total budget for the medical school. These figures vary from 1 per cent, in 1 school, to 12 per cent, in the school with the greatest support for pediatrics, but only this one school used more than 9 per cent of the total budget. The total budgets of these 17 schools ranged from $150,000 to over $1,500,000, in the wealthiest. The actual working budgets of the

pediatric departments of the schools from which we have reports vary enormously. We are, of course interested in the poorer schools, and we have here these items as representing the total working budget: $7,600, $3,000, $6,000, $7,000, $3,000, $7,000, $3,000 and $2,500. However, of these 17 schools, we find 1 with a budget of $130,000. I present these sketchy figures first just to give a general idea of the problem.

There were certain faults in our system of survey of pediatric education that seemed to us inevitable, even before we started. We actually were more concerned about certain intangible aspects of pediatric education than about the number of hours devoted to lectures and seminars, the number of beds or the number of patients. It is obviously impossible to get the data on these intangible aspects that we need in order to evaluate clearly what is being done in education. The results of any system of education can be measured by the professional ability and the character of its graduates. As we look over the practitioners of pediatrics or the general practitioners who practice pediatrics, it is apparent that their greatest shortcoming is lack of ethical and scientific standards, a fault even more serious than their lack of knowledge and skill. Because of this lack, we see the practice of medicine frequently becoming a trade rather than a profession. The business organization of medical practice too often takes up more time than does the pursuit of scientific knowledge. We see commonly an uncritical attitude which makes physicians intellectually satisfied with attending medical meetings during some vacation periods, and all too ready to permit detail men to instruct them in new forms of drugs and new systems of therapy.

How better can we teach a young physician the proper idealistic attitude toward his patients—consideraton first of his patients' well-being and not his own? How can we teach more thoroughly the technics of investigation and the scientific approach to the evaluation of clinical data, so that pediatric education will not fail to teach a student how to continue his own education after he has separated himself from his formal program of instruction? An idealistic attitude, as well as the scientific attitude, can be taught only as a process of absorption of the influences which a student gets from all his instructors throughout medical school, and particularly from his teachers during his clinical training as a house officer and resident. Good clinical teaching can never be separated from the care of patients, but in the usual shift from the basic sciences in the first two years to the clinical instruction of the last two years, there is a risk of teaching only practical clinical skills.

When a staff member is confronted with a patient and has a student beside him, two conflicting attitudes must be held simultaneously.

First, he must be practical, remembering that he has in his hands one Mary Smith, a person, not a statistic or a problem in physiology. He must make a decision this day, this afternoon, this hour. He has to teach the student to be decisive in his actions. Even though the staff member may not be able to make a diagnosis, he at once must make some decision for immediate care, and a host of details must be specifically attended to. He is often forced to undertake some form of therapy before he clearly understands the cause of the condition he is trying to treat, since in many instances medical science is unable ever to do more than classify a group of symptoms. This portion of the instruction is the practical aspect of clinical teaching, one which the student all too quickly grasps and in which he becomes skilful if he is to be a successful practitioner. At the same time, the staff member must teach the student the other attitude, that of intelligent agnosticism, of constant criticism of the theoretic basis on which a physician is forced to make his practical decisions. The beginning of wisdom must be in the definition of ignorance, and this critical attitude must be clearly established with every patient and with every student. He must never confuse, even subconsciously, terminologic diagnosis with real, understanding, or accept conventional and superficial therapy as necessarily sound and rational therapy. When he prescribes a vitamin, hormone or antibiotic, he constantly must make it clear to himself and to the student whether his action is only for practical reasons or is one established on a firm theoretic basis. The conflict and confusion between practical expediency and scientific soundness is seen particularly in the teaching of child psychology. The staff member may need to emphasize constantly that the kindest care of a patient and the attention to the patient's emotional outlook must be matters of great concern to every physician, but he must be careful that he does not accept as proved the concept that adult emotional instability results from a too rigid feeding program in early infancy, any more than he would teach dogmatically that mitral stenosis is certainly consequent to lack of rest in bed, or that sudden death results from a large thymus. He most carefully must teach the student to teach himself after he leaves the medical school and to evaluate critically the medical articles he reads.

How are we in pediatrics to teach the correct moral attitude if our departments are so limited in facilities that we have only part time teachers able to give didactic instruction through a system of lectures to large groups of students? How can we teach the critical scientific attitude toward the practice of medicine from assigned work in textbooks and from case demonstrations with study by the student enforced through the fear of examinations? As I hope it will be brought out

in the rest of this symposium, it is clear that a department of pediatrics and the other clinical departments must consist of much more than a few physicians who are able to give lectures and who have the ability to describe completely a disease, with an exact knowledge of doses and symptomatology. The student, throughout his career, must be in constant contact with men who have special interests and special skill, with the men who work only in the laboratory and whose abilities confine them there, as well as with the superb clinician. I should like to see each student involved in a research project, preferably one that is disappointing. Only by an expensive education can a student be equipped for his future practice to be any more than a technician, to carry out the suggestions of visiting detail men and to follow an expedient routine.

I think this symposium can do more good for the future by setting up new standards and new ideals in pediatric education than by any other effort its participatns can undertake. The conception of what constitutes an organization for pediatric teaching adequate to enable us to assume the enormous responsibility to the public that rests on those concerned with medical education is not only woefully limited in the mind of the lay public but also in that of the medical profession. If we ask whose fault it is that such meager knowledge of what constitutes good medical teaching exists and that such low standards have been tolerated, we must admit that the fault is certainly in ourselves. We have done little to acquaint the medical profession itself with the concept of a program for a broad medical education that shall be something more than several simple high school courses finished with an examination. Few conceive that a medical school has any responsibility for the health of its community, and few schools have concern for the physician after he is graduated. Why is it that medical schools have completely shuffled off responsibility for the education of the intern and the resident, except in the few hospitals which are directly associated with the schools of undergraduate training? Whose fault is it that interns and residents in most hospitals are given no teaching program whatever; in fact, that they are usually exploited for the good of the hospital and forced to do routine work in return for the privilege of looking over some practitioner's shoulder for their training? Our own American Medical Association rates the medical schools of this country, and there are only a few that are not rated as class A. What does the term class A mean to the layman, or even to many physicians? It means that a school is good, excellent or at the very least that it is satisfactory. Lay supporters of the poorest of schools often are honestly, if naïvely, surprised when one criticizes their school as being low in standards and poor in equipment, in spite of the fact that it is listed as class A. The community rests content and

satisfied because its school has a class A rating, and it is proud that it would not tolerate a class B school. It is about time that we revised our ideas and began setting constantly higher standards, as we have, in the past twenty years at least, for grade A milk.

In a recent article by H. G. Weiskotten entitled the "Financial Support of Medical Education," which appeared in the *Journal of the Association of American Medical Colleges* (22: 1 [Jan.] 1947), based on the survey conducted about a decade ago, one sees a reflection of a common attitude of what constitutes satisfactory provision for education. In his discussion of the financial support of medical schools, Weiskotten suggested satisfactory minimum figures for clinical departments, which, as nearly as I could estimate, might allow a department of pediatrics from $10,000 to $15,000 a year. He stated, "The minimum total budget for the departments of medicine, surgery, pediatrics, obstetrics and gynecology, public health and psychiatry will vary from $125,000 to $150,000," and, later, "This gives a total minimum instructional budget of from $250,000 to $300,000 for the conduct of a satisfactory program of undergraduate medical education for a small school." It should be emphasized that he offered this as a minimum from the results of his survey, but that he would accept such a budget as satisfactory. We should indeed accept low standards if this average must be considered satisfactory.

It seems that every organization with money to spend, whether a private foundation or a government bureau, has the besetting urge to support a specific project, such as poliomyelitis, the care of crippled children, the metabolism of galactose or the clubbing of the left foot, but no one wants to furnish general and basic support for the organization that must produce and stimulate the men who have to be developed in order to carry out later all the specific projects. Unless we can teach lay groups concerned with supporting medical education a broader conception of what medical education should be, pediatric education will continue to get along on the pathetically tiny budgets which are now provided in most schools, and the medical profession will be trying continually to correct through feeble postgraduate courses the deficiencies of undergraduate education.

At a time when the expenditures of billions of dollars for medical care is being seriously considered by Congress, we are still thinking of basic medical education as something that is adequately supported by $30,000,000 a year, with $1,500,000 a year for pediatric education. On this feeble basis we see built a great superstructure of medical service, with annual expenditures, actual or proposed, of $15,000,000 for poliomyelitis, of perhaps $30,000,000 for training of psychiatrists, with enormous sums ready for rheumatic fever and $60,000,000 set

aside for a program of emergency maternity and infant care. Because of a simple and dramatic appeal, the unsophisticated public is willing to give generous support to fields of medical effort, as yet depending on a nonspecific therapy of dubious value, with programs characterized by the magnitude of organization rather than by the existence of a basis for effective action. It must be emphasized and reemphasized that institutions for basic medical education must first be improved, and only then can the individual needs be effectively attacked.

University Hospital.

DESIRABLE CORRELATIONS BETWEEN PEDIATRICS AND PRECLINICAL DEPARTMENTS

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THIS DISSERTATION is predicated on the assumption that the preclinical departments include physiology, pharmacology, pathology, biochemistry, bacteriology and anatomy. It is accepted as axiomatic that sound pedagogy in any field of learning involves an integrated program of instruction. In the field of medical education the clinical and the preclinical departments have overlapping objectives. The objectives are concerned with the desire to impart understanding of the structure and function of the human body, both in health and in disease, and of the means of combating disturbances in its mechanisms. The overlapping objectives of necessity bring a measure of integration, in a way which imposes no need for a conscious effort to enhance the integration. These questions then may be asked: "Is there a need for greater cohesion of purpose? Can a single department, namely, pediatrics, seek increased correlation with the preclinical divisions without endangering the responsible relation which these divisions have to the other clinical departments?" At one time or another I have posed these questions to most of my colleagues who teach pediatrics and preclinical science; the answers, with few exceptions, have been emphatically in the affirmative. The answers often have aroused a feeling that the school was not making the most of its opportunities for integration. The speculative possibility that too much blending of purpose between pediatrics and preclinical training might affect adversely similar desirable correlations between preclinical teaching and instruction in other fields, such as medicine and surgery, may be dismissed as either a phantom fear or a certain sign of a need for greater unity among the clinical departments themselves. Since this phase of the problem has been assigned to the next speaker, Dr. Rustin McIntosh, I shall not pursue it further.

Before considering the practical means by which integration can be advanced, it is logical to state briefly the objective being sought. The goal is nothing less than instilling in the student that manner of thinking which is making medicine a science and something more than an art or a trade. The statement has been made that nineteen out of twenty

pediatric patients present no problem in diagnosis. A simple question concerning the complaint, an inspection of the skin and throat and experience in observing the obvious are all that is required. Reasoning is not involved. Cerebral excitation is mostly at the level of the midbrain. The nature of a malady is known in much the same way that a man recognizes and greets a friend, without critical analysis of his features. Medicine practiced in this way is a trade. With the addition of humanitarian features it becomes an art. Both the trade and the art might be taught by the apprentice system. But science begins with the twentieth case, in which the cause of a symptom is obscure. The twentieth case is the sole excuse for the modern medical school. If medical education has been successful, a chain of events will follow. The obscure symptom excites intellectual curiosity. Curiosity leads to the formulation of a hypothesis. The hypothesis is then exploded for its logical corollaries. If the corollaries are not logical, the hypothesis can be abandoned at once. If it cannot be abandoned, its soundness must be examined in an attempt to verify one or more of the corollaries. Verification may involve nothing more than looking for a sign or a symptom which previously had been neglected. Oftener, it embraces an order for certain laboratory tests. Occasionally, it demands the skill and the imagination of a genius. Hypotheses are useful even when they turn out to be wrong, for then they serve to disclose at what point the reasoning went astray. A new hypothesis can be formulated and its consequences exposed to further tests of observation and experiment. So, sometimes slowly, sometimes swiftly, a diagnosis is made. The process of thinking in the scientific way cannot be learned through being apprenticed to a practitioner, no matter how wise or how able he may be. During reflection the mental mechanisms must rove freely through the broad fields of physiology, biochemistry, bacteriology and, sometimes, embryology, and these assume some knowledge of anatomy. Preclinical science is the mental tool of astute medical thought. It should pervade the air and surround the student through all four years of the medical college.

Expressed in these terms, the problem of correlation is large. It embraces more than the effort to alter the preclinical program so as better to pave the way for clinical pediatrics. It involves responsibilities for which many clinical teachers are ill prepared. Yet the path of progress demands united effort to accomplish a worth while end.

Some of the things which confuse the student through lack of united effort may be cited briefly. They arise often from inability of the teacher to recall the abysmal depths of his own inexperience when he was a student. It is difficult for me to remember the time when I first had to learn that the mitral valve was in the left side of the heart. With enthusiasm and relief I repeated a phrase which came from an

upperclassman, not from an accredited teacher: "Martin Luther, the reformer; mitral left, tricuspid right." In this stage of first learning, the multiplicity of terminology may bewilder the student. Is it too much to plead that he, throughout his years in medical school, should find unanimity of opinion concerning preferred terminology? To be sure, he must learn synonymous terms. But confusion will be less if all teachers use the same primary language and then explain the synonyms. "Shigellosis" may be an appropriate, and even a more modern, term than "bacillary dysentery" but the habitual use of the former term in the course in bacteriology and the conscientious avoidance of the name in pediatric teaching does not lighten the burden of the neophyte medico. An understanding of the homeostatic mechanisms of electrolyte balance is essential to present day pediatricians. All who have tried know it is difficult to impart this knowledge. It does not help to have plasma levels discussed in milligrams in one division and in millimols or milliequivalents in another. One of my colleagues, who is interested in congenital anomalies, tells me that students are conscientiously being taught to forget whatever embryology they may have learned in college. Complete neglect in medical school of any basic subject does indeed suggest its unimportance and encourages the student to forget.

What, then, are the steps which can be taken to promote the desired cohesion? The steps obviously must be practical, and all measures will not be applicable in all medical schools. In the strong school with ample endowments for the preclinical divisions and with relatively large teaching staffs, many methods can be tried. In a division well equipped with money and staff, the major problems are to prevent complete self centering of interest and to create within the division a shared feeling of responsibility toward the objectives of all medicine. This feeling may not be easy to create when the divisional head lives in a dream land of research, wants to utilize all the departmental potentialities to promote progress in a specific investigation and emotionally, if not verbally, regards teaching as an unpleasant obligatory interruption of more important affairs. These problems are difficult, but, with a strong dean and with the opportunity for exposure to the persuasive power of concerted opinion from other departments, they are not insurmountable. Unfortunately, strong medical schools with amply endowed and well staffed preclinical divisions are in the minority. In the majority of the country's schools the preclinical divisions are economically starved. The salaries for full professors lie in the range from $5,000 to $7,000, and the expenses of entire divisions must be met on $20,000 to $30,000. These resources sometimes contrast sharply with what is available in the clinical departments. It is not uncommon in departments of internal medicine to find research and service laboratories in bacteriology and chemistry operating on budgets which exceed

those available to the divisions in which the teaching must be done. In Cincinnati the upstart is pediatrics, with resources for research greatly in excess of those provided for all of the preclinical divisions combined. In any medical school, in a preclinical division barely solvent in money and staff, there is less danger from self centering of interest, but the problems of correlation are many times greater. I repeat, poorly supported divisions are the rule; rich divisions are the exception in the over-all scheme of things.

But whatever the financial resources of the division, correlation demands cooperation, and cooperation demands that people get together. I cringe as I say these words, for I live in a world where it seems that sometimes life is just one committee meeting after another. I know too well the feeling of futility after an afternoon wasted because little or nothing was accomplished and because the talk strayed far from the appointed topic. Even then, the meetings serve a purpose in bringing men together. The discussions, the digressions, the futility are all expressions of human reactions. The reactions may sometimes engender paranoia, but usually they lead to better understanding of a common purpose.

In propitious circumstances, the "getting together" may come from conditions less artificial and more effective than the willingness to serve on committees. I could dilate at length, even wax enthusiastic, on the virtues of a common dining room. The principle is simple. Deeply rooted conventionalism demands a pause from labor when the lunch time whistle blows. The ingestion of food acts as a sedative to frayed nerves and promotes cooperative conversation. It is worth the time needed for planning, the money involved and even the erection of a new building to create a scheme which will bring the teachers to the same lunch table. Getting them there will be easy in the skyscraper building in which all divisions are housed under essentially one roof and there is no other convenient place to eat. It can be difficult when the building of the medical school and the affiliated hospitals are scattered over a number of city blocks. Here, I know of no other way than to make the headquarters for eating comfortable and attractive, to regard the quality of the menu as an item of importance and by subsidy or endowment to serve the food at a price which prevents competition. For, if closer correlation between clinical and preclinical divisions is desirable at all, a way must be devised to bring their staffs together often enough and under such conditions that all divisions can share in an awareness of the problems of an integrated curriculum.

Awareness of the problems in other divisions must be the first step in pedagogic correlation. Steps which implement the awareness will not be the same in all schools. The pediatrician may, for example, have discovered that hepatic function is being neglected in the course in

physiology. The lack of this basic knowledge hampers his clinical teaching. It will not be enough to persuade the physiologists to put more "liver" into their preclinical course. Whoever is to do this teaching must be surrounded for a while by pediatricians; ideas must be exchanged freely to bring more purpose to the cause in physiology and, conversely, more science to pediatrics. When the department of pediatrics is strong and the division of basic science is weak, research men from pediatrics may help in the actual teaching in the preclinical division. This procedure is followed in Cincinnati. One full time teacher and research worker holds university appointments in two departments—pediatrics and bacteriology—and carries significant teaching obligations in both. Other members of the pediatric staff assist in the teaching of biochemistry, and at times they have helped with physiology. In the reverse direction, we have had as guests at pediatric ward rounds, seminars and conferences members of the preclinical staff, but I confess they rarely have been invited to participate in student teaching. Whether they should be invited to teach obviously will depend on the internal resources of the pediatric staff and on the possibility of contributions from men with highly specialized interests who happen to belong to a preclinical department.

Before bringing the discussion to a close, it may be well to view its topic in perspective. In a commencement address at Princeton some years ago, Dr. James M. Landis, the dean of Harvard Law School, remarked, "No teacher worthy of his salt but has been dismayed by his own ability to portray a subject adequately and also by the unwillingness of his class to put forth the intellectual effort required to receive it." Many years ago I was startled by, but now have become resigned to, the inability of 90 per cent of fourth year men to recall facts which I tried to pound into their heads when they were third year students. Correlation is not a panacea. There is need in all departments for greater skill in the art of teaching, for teachers gifted with the ability to arouse the dormant interests of able but indolent students and for improved methods of selecting the student body itself. Throughout this discussion it has, in mathematical language, been necessary to hold all other variables constant in order to assess the effect of a single independent variable, namely, the degree of correlation between pediatrics and preclinical education. But there are other independent variables. Neither their combined effect nor their relative importance in evaluating the efficiency of the four years in medical school, that is, in determining the all-important dependent variable, has been assessed at all. Of this, we should all be conscious.

Children's Hospital (29).

DESIRABLE CORRELATIONS BETWEEN PEDIATRICS AND OTHER CLINICAL DEPARTMENTS

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IT IS difficult for me to think of any clinical department with which it is not desirable—highly desirable—that pediatricians shall have a practical working collaboration in the study of clinical problems, in our efforts to find their solution and in the teaching of these processes. To my mind, then, every correlation between pediatrics and the other clinical departments is a consummation devoutly to be wished. One could argue only in regard to degree, emphasis and mode of achievement, always with a weather eye cocked to make sure that "the tail does not wag the dog."

Correlations with other departments are largely a matter of attitudes. There has been great progress from the days when pediatricians were looked on by their clinical confreres as a somewhat schizoid band of formula fixers, stool gazers and chin chuckers. Nowadays, when a pediatrician is discovered ardently grinning, cooing or clucking at a small package in his effort to evoke an appreciative smile, the maneuver will be recognized for what it really is—an attempt to assess the degree of recovery of a once apathetic patient from an acute illness, or perhaps a calculated gambit in the process of psychometric evaluation—and the recognition will be granted not only by any open minded psychiatrist, but also by an internist or by any other specialist, provided he has had at some time the opportunity to rub elbows at the bedside with a modern-trained pediatrician. Pediatrics has come a long way from the misunderstanding of such titles as "The Menace of Psychiatry," which once earned for our own beloved Dr. Joe Brennemann black looks from psychiatrists—until they read his paper and perceived that in reality the best of them were plugging along on the same road and heading for the same goal. The specialty has come a long way, too, from such crass antagonisms as once plagued the relationship between the pediatrician and the otolaryngologist, when it was all too common to overhear a sensitized consultant refer to "that —— pediatrician" who presumed to say that a given ear drum did not require immediate incision.

Historically, in my opinion, the improved position of pediatrics reflects the fact that it has emerged from the stage in the organization

of pediatric teaching in which it had to plead the justice of its claim to a peculiar and dominating concern with the welfare of infants and children and has come to a point where it can go out legitimately in search of help from any of the medical or cognate disciplines that can aid in arriving at the solution of its problems. Whereas the focus of the struggle once lay in the need for recognition of pediatrics as a specialty, now it is free once more—and, indeed, is morally obligated—to return to other disciplines and other specialties and to enlist all possible assistance in the quest for its specific goals. Doubtless, we in the United States are not so advanced in this regard as the Swedes, who have now been teaching pediatrics as a specialty in their medical schools for more than a hundred years; yet we are better off than the British. Certainly there is no reason now that we pediatricians should prolong the isolationist policy of pushing ourselves away from our clinical colleagues; on the contrary, we have every inducement to enlist their help in an effective collaboration.

The assignment given me in this symposium might have taken the form of an assessment of the present situation in the clinical teaching of pediatrics in the various medical schools of the country. Perhaps it should have taken that form in order to be of the widest range of help; but I have deliberately avoided this obvious and, in some respects, easy approach. Without in any way wishing to cast aspersions on the Academy's survey of the country's resources in pediatric care, or on Dr. John P. Hubbard or Dr. John McKenney Mitchell or any of their hard working staff, I freely confess that I have become so sensitized to questionnaires and personal inquisitions that I have decided not to inflict on you any such trite queries as, "How many hours do you devote to the teaching of the psychiatric aspects of pediatrics?" or, worse still, "What do you regard as the ideal relationship between the departments of obstetrics and of pediatrics?"

Instead, I am quite willing to expose in an all too personal degree the departmental linen of the setup at my own particular university, citing it as textual material for arriving at a definition of desirable goals. It will be only too evident that the washing process, though it has been going on for a long time, is far from complete, that there is a limit to the accomplishment attainable from the use of soft soap and lukewarm temperatures and that the most conspicuous spots are going to require the application of several of the more potent detergents, together with an extra modicum of heat and kinetic energy. A number of concrete observations emerge, some of which are little more than hypotheses, but others can be backed up with chapter and verse.

One is that successful collaboration with other departments does not originate in the planning of a teaching schedule by a desk-bound

curriculum committee, but that collaboration is most effective when it springs from a common concern over a clinical situation. The problem of establishing adequate pulmonary ventilation, for example, in a newborn infant who shows some measure of respiratory inertia with cyanosis may serve as the assembling point for the obstetrician, the anesthetist, the pediatrician and, possibly, the otolaryngologist. I do not pretend that we have reached this ideal correlation of forces in our own machine, but I do know that there exists here a situation in readiness, waiting only for the activating influence of a restive investigator.

This point leads to the consideration that collaboration is stimulating, constructive and effective almost in direct proportion to its application of quantitative measurements. It may commence simply with the scoring of crude morbidity or mortality rates based on the uncontrolled trial of a therapeutic measure or surgical procedure; but progression from such a beginning to a closer study of the underlying mechanisms is natural and, in fact, almost inevitable if the participants possess any alertness or inquisitiveness. There exists, it seems to me, a gloomy notion on the part of some members of the medical profession that in proportion as the science of medicine is cultivated the art of medicine languishes. I should be the last to admit that there is a vestige of truth in such pessimistic fantasy. But I say again that for purposes of enlisting effective collaboration among clinical disciplines, concern over the preservation of the subtleties of the art had best be relegated to the background. Limited and, as a rule, short-lived assistance is to be had from the man who says, " I shall show you how to do it," as compared with the abundant help that can be enlisted from one whose attitude is, "Let us find which way works best."

Collaboration in teaching thrives, then, on collaboration in investigation. Since the number of problems remaining unsolved is infinite, whereas the investigative-minded personnel of a teaching department is in any instance distressingly finite, what measure of success can be achieved? How much can the teaching as a whole in a clinical subject like pediatrics profit from the existence of what might be conceived of as circumscribed foci of effective cooperation in related fields? The answer is, the teaching would profit more than one might think. There is a radiant quality about joint ventures that are in actual operation, which enables their influence to extend well beyond the limits of the immediate problem. On the basis of the perfection of an analytic or a therapeutic technic, a recognized mastery of the literature of even one small segment of an investigative field or a proved enthusiasm in research, however circumscribed the problem in hand, a bridge can be laid for the meeting of active and effective minds.

There is room for legitimate question as to the wisdom of attempting interdepartmental participation in the teaching exercises at every stage of clinical instruction. In the present state of the curriculum at Columbia, pediatrics is taught in the third and fourth years. An effort is made in the third year to present a straightforward, uncomplicated and, in a measure, oversimplified picture of the subject as it is handled in pediatric textbooks, including the anatomic and physiologic backgrounds, the changes with age and the common diseases as they usually express themselves. In the fourth year the teaching is based almost entirely on case work; since practically no clinical problem fits exactly into the textbook description, it is mainly in the teaching of the fourth year that interdepartmental correlation is required.

The case method involves certain practical hazards, and two such risks merit particular attention. One involves the distribution of the case material to which an individual student will be exposed; the other has to do with the availability of the colleague from another clinical department at the particular time that he is most needed, while the case is still current.

In any active service that includes both inpatient and outpatient problems, with reasonable vigilance in the distribution of new cases it ought to be possible to see that each student encounters a representative variety of clinical situations, ranging from essentially well children all the way to a selection of esoterica and uncrackable diagnostic nuts. This part of the problem of case distribution can be tackled with some success, and with a minimum of unfairness to the individual student, if due attention is paid to its anticipation. But there still are bound to be some unavoidable gaps.

If the fourth year class is divided into groups so that any one student has his pediatric work during a consecutive two month period, it is likely that the seasonal variation in disease incidence will operate to give one student a great deal of contact with poliomyelitis, for example and little experience with acute infections of the respiratory tract, while another student's lot will be just the reverse. One must of necessity forgo in advance the hope of so arranging the teaching that every student will have personal experience with every major category of disease. However, this inability is less grievous than one at first might suspect. One confers a greater benefit on the student if one teaches him methods of clinical appraisal than if one tries to show him an example of every disease in the book. Even if John Doe, class of 1948, doesn't happen to be called on to work up a case of tuberculosis of the spine, for instance, he ought to have learned by the end of his fourth year course how to discover a stiff spine from examination, what causes of spinal rigidity to think of, what tests

to apply in excluding some of its commoner causes and where to turn for confirmation of his diagnosis and for proper therapy.

When appointments to the hospital staff originate in the university faculty, then assurance is granted in advance that due consideration will be accorded the need for proper balance in selection of the staff, so that research, teaching and care of patients may be matched appropriately. When the balance is gaged correctly and when it has been applied successfully to all the clinical departments in a medical school, then in practice no problem whatever arises in regard to collaboration among the clinical specialties, and teaching problems are simplified at all levels.

It would be interesting, if one had time, to explore the history of the organization of the hospital staff and to observe the practical results of the shifting of responsibility for professional appointments from lay boards to university faculties. Of the benefits accruing to medical teaching there can be no doubt whatever, and in other respects, too, it would seem clear that this form of organization makes for the greatest gains in the long run. One must be forewarned that in times of economic stress, when the cost of patient care rises and the return from the endowment falls, the temptation is great to appoint men to the visiting staff who are primarily successful practitioners, who therefore can be expected to bring to the service a type of patient that is financially profitable and who, moreover, can carry their own weight so far as salary is concerned and even, it is argued, contribute to the budget of the department's general activities. For the long pull this attractive notion contains an element of risk, and it is bound to be prejudicial to successful correlation in clinical teaching the moment it results in eliminating the men whose dominant interest is in research or teaching.

In respect to interdepartmental correlation, the independent children's hospital stands to suffer, especially when it is geographically isolated from loci of activity in other clinical disciplines. Here the plan of the medical center, with a general hospital and various specialty hospitals physically grouped about a medical school, bears fruit. Just as it is easier, in such circumstances, to command competent consultation service day and night, weekdays or holidays, for proper care of the patient in an emergency, so it is easier for this cooperation to extend into the realm of teaching naturally and with little or no requirement for artificial stimulation.

If I were to pick out any single cause of failure, or perhaps I should call it relative failure, in interdepartmental correlations in the operation of my own department, I should without hesitation point to geographic separation of pediatric patients from the particular pediatric hospital where the activities of my department are centered. It hap-

pens that we have no contagious disease service at the Columbia-Presbyterian Medical Center, so that the teaching of many of the common communicable diseases must be done at a municipal hospital. Neither do we have an orthopedic service. Although we can do some teaching under our own roof in these two fields because of the vagaries of contagion and the inherent hazard of the long incubation periods of some of the exanthems, or by selective admission of children presenting diagnostic problems in locomotion which eventually become orthopedic problems, I could not claim that the job we do is an effective one. It happens, too, that some patients of pediatric age are admitted to the Institute of Ophthalmology, the Neurological Institute or the New York State Psychiatric Institute and Hospital, each of them in a separate building. Such patients, though they are not far away, are lost to us for purposes of pediatric teaching in its full dimensions. When they are included in the teaching program, it is under the aegis of the specialty concerned, with the emphasis on the corresponding organ or system.

However, in respect to the patients in Babies Hospital, correlated teaching comes easily to hand and due consideration can be given both the special and the general aspects of a clinical problem. It has been agreed from the beginning that all these patients are the primary responsibility of the department of pediatrics, and this applies to those on the general surgical floor and on the urologic and otolaryngologic services, as well as to those on the medical floors. Essentially, too, we have no physical or organizational problem in respect to the newborn infant nurseries of Sloane Hospital, including the unit for premature babies, all of which are conveniently accessible and are under the jurisdiction of the department of pediatrics. The placing of primary responsibility in the hands of the pediatric staff has, it seems to me, a smoothing effect on interdepartmental jealousies. Admitting my own prejudice, I nevertheless cannot escape the conviction that such an arrangement makes for better all-around care for the patient and for more effective pediatric teaching.

I mentioned the fact that children admitted to the New York State Psychiatric Institute and Hospital are lost to pediatric teaching, even though they are only a block and a half away. However, through special provision we have a highly effective arrangement in operation for the correlation of teaching in psychiatry and pediatrics—so effective, in fact, that it stands in my own mind as the pattern which we should strive to emulate in other clinical combinations. A graduate of our own pediatric house staff, who thus established his initial orientation and achieved recognition among the pediatric group, subsequently took special training in psychiatry, was certified by the

American Board of Neurology and Psychiatry and was then appointed to the department of psychiatry at Columbia, with full time assignment to pediatrics. He has his office in Babies Hospital, works in the wards and the outpatient department and is constantly available. His salary happens to be paid by the hospital, but that is irrelevant. The point is that there is someone always on hand, easily accessible to medical students, house officers and members of the staff, who can be consulted about an individual case or can teach a group about a selected variety of behavior problems, who can help in eliciting information that bears on a child's attitudes and feelings or can show one how to go about getting this information and who can cover the full range of psychodynamics in diagnosis and therapy and, in general, keep an eye on the emotional tone of the service. The value of this form of interdepartmental correlation could scarcely be overstated. Its pattern is, of course, not unique, since a similar arrangement is in operation at Cornell, Harvard, Buffalo, Minnesota, California, Stanford and elsewhere; I do not pretend to give a complete list. The significant point is that not one of the departments which have tried the scheme would ever again be satisfied with less. In fact, we should all, I venture to say, be ready to make real sacrifices elsewhere in order to preserve what we now have come to regard as essential.

I am not persuaded that need exists at present for such intensive correlation with all clinical departments as I have just described. For one thing, in no other specialty is there a demand for the expenditure of time comparable to that in psychopathologic case work. However, on the basis of my present understanding of interdepartmental teaching relationships, I am quite ready to single out this one example as the model of desirable correlation between clinical departments; to emphasize the pattern, I shall state again the organizational components which appear to me to determine its success in actual operation. I cite them as the qualifications of the collaborating specialist in some other department, department X:

His academic appointment is in department X; his hospital appointment (not necessarily his only hospital position) is to the pediatric hospital staff. Competence in his chosen specialty is assumed, but in addition to that, an interest in children must be self evident and dominating; indeed, recognized competence in pediatrics outside his own specialty will be of the greatest help to him in educating conservative pediatricians. He should have a base of operations in the pediatric hospital or outpatient clinic, according to the nature of his job—symbolically, a desk to put his feet on. He should be accessible and available when necessary. An investigative bent (it would be asking too much to say "skill") is required, and there should be enough freedom

from nonpediatric responsibilities and commitments to provide the time and the encouragement to put that bent to work.

This outline is one specific device for promoting correlated teaching in clinical fields. Another device worth mentioning is the weekly clinical conference. The staff, as well as the students, like to mull over the rare or difficult cases together; they like to hear what other persons may have to say. Case material is chosen far enough in advance so that the program may be prepared adequately for presentation and consultants may be invited from other departments to discuss diagnosis or therapy from special angles or, perhaps, to present new work in a related field of investigation. If a rare disease is under consideration, the hospital's total experience with it may be reviewed against the background of the published literature of the condition, or, with a commoner ailment, results over the past few years may be summarized. Such conferences differ from a peripatetic ward round. The audience—or rather, the participants—are seated; patients are brought to them in the amphitheater. The pace is slow, to encourage thoroughness. Equal emphasis falls on the unknowns, on what remains to be done or to be attempted and on what already has been accomplished. Questions are encouraged, and discussion from the floor, so to speak, is part of the general design. These exercises, which are standard practice in many teaching hospitals and which are of special importance in pediatric teaching, have a high index of interest and intellectual stimulation for the student. Focused as they are on the individual patient and his clinical problem, they have the unfailing merit of realism; they supply a pragmatic demonstration of what can be gained and hoped for from the cooperative participation of various disciplines in a concerted attack.

It is hardly necessary to mention additional specific technics of collaboration among clinical departments. As I stated earlier, correlation is largely a matter of attitudes—of mutual respect on the part of the workers in one specialty for the methods and aims of those whose work is in another—and a common zeal for teaching. Any clinical situation of relevance to more than one department then attracts votaries from every pertinent direction, and, when the pedagogic urge waxes strong, the pediatrician's only care may be that he guard against being sidetracked into being a mere referee and timekeeper.

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MAKEUP OF A COMPLETE PEDIATRIC DEPARTMENT

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PEDIATRICS is no longer regarded as a narrow medical specialty confined to the diagnosis and treatment of childhood diseases. It is more appropriately defined today as that division of medical science and practice which deals with all aspects of the physical, mental and emotional health of the human race throughout infancy, childhood and adolescence. The primary differences between pediatrics and the medical specialties are, first, that pediatrics is concerned with the whole person instead of with a single organ system or a particular region of the body and, second, that it deals in the main with persons who are undergoing continuous change of a developmental nature. Indeed, the factors of growth and development, with their peculiar impact on every type of health problem, constitute the only justification for setting pediatrics apart as a special medical discipline.

The breadth of its scope and the implications of its over-all significance, not only for the prevention and treatment of disease but also for the promotion of a maximal degree of physical fitness and emotional well-being, have resulted finally in the elevation of pediatrics to the status of a major department in the leading medical schools of America. As medical science grows and as society becomes more cognizant of the potentialities of a dynamic program for preservation of health, the place of pediatrics in the curriculum of the medical school will undoubtedly be greatly expanded.

As regards subject matter or course content, one merely needs to peruse the pages of a modern textbook of pediatrics, to say nothing of a comprehensive system, such as Brennemann's "Practice of Pediatrics," to become convinced that the responsibility of providing medical students with a working knowledge of those aspects of the field which are peculiarly related to the growing and developing person is a weighty one. Even in the case of those disease entities which occur in adults as well as in children, and which are taught adequately from the adult point of view by members of other departments in the medical school, it is necessary for teachers of pediatrics to point out the peculiar manifestations of such disorders in infants and young children and to provide the student opportunities for direct experience with patients so afflicted.

From the Department of Pediatrics, University of Minnesota Medical School.

The older didactic method of teaching by means of many lectures has given way in most progressive medical schools to the more interesting and more natural method of allowing the student to learn by personal observation, experience and reading under close supervision. Nevertheless, it is still desirable to operate the teaching program in pediatrics according to some natural sequence, whether it is carried out by means of a short series of lectures and demonstrations or by student seminars, quizzes on assigned reading or bedside discussions, or by a combination of these methods.

Accordingly, the fundamental principles of genetics and those of growth and development, including the mental and emotional as well as the physical aspects of the subject, are most appropriately presented at the beginning of the course in pediatrics, preferably during the latter part of the sophomore or the early part of the junior year. The data offered at this time can be correlated advantageously with a practical consideration of the special methods utilized in obtaining the clinical history and in examining infants and children. This preliminary phase of the course is followed naturally by that pertaining to the anatomy, physiology and psychology of normal, full term and prematurely born infants. The student is then prepared to consider the theoretic and practical aspects of a comprehensive program of preventive pediatrics.

The sequence followed in teaching the remaining aspects of the field, which pertain in the main to the organic and functional disorders of infancy and childhood, is not of special moment. The psychosomatic and psychogenic problems of infancy, childhood and early adolescence are so different on the whole from those of adult life that they are better taught in the pediatric department by the pediatrically oriented child psychiatrist or by the psychiatrically oriented pediatrician, with the assistance of a clinical psychologist and a psychiatric social worker. The responsibility for teaching so-called surgical pediatrics should be shared by members of the departments of pediatrics and surgery, preferably in a pediatric atmosphere.

The proportion of the total curricular time which may be regarded as adequate for teaching the subject of pediatrics to undergraduate medical students today will probably prove inadequate in the future. Nevertheless, it should be possible to insist that a reasonable amount of time be given this broad subject in every class A medical school. Furthermore, it would appear from personal observation and from what already has been said here today that a minimum standard should be recognized as regards other essentials to an adequate teaching program in pediatrics, such as qualified personnel, clinical material and library and laboratory facilities.

There are wide variations among class A medical schools in regard to the amount of curricular time allotted to the teaching of pediatrics. Because of differing viewpoints and conflicting interests among the various departments of a medical school, it appears to be an almost insuperable task for an interdepartmental committee on curriculum to determine a mutually satisfactory division of teaching time. It is particularly difficult to achieve a reallocation of interlocking schedules in the older, tradition-conscious institutions, which have not kept their curriculums "beamed" to the inevitable changes in content or to the need for changes in emphasis. Objectives often can be arrived at by the slow processes of evolution and faculty education and through friendly interdepartmental cooperation.

After a fairly prolonged study of the problem of time allotment at the University of Minnesota Medical School, it was agreed several years ago that the so-called block system would satisfy our needs best. Under this arrangement, all lectures for the junior class as a whole are scheduled for the hours from 8 to 8: 50 a. m. and from 5 to 5: 50 p. m., leaving the hours between 9 a. m. and 5 p. m., excepting the noon hour, free for clinical clerkships in the departments of general surgery, internal medicine, neuropsychiatry and pediatrics. The class is divided into four divisions of equal size which rotate among these departments, spending ten weeks on each major service.

This plan makes it possible for each clinical department to organize its own daily or weekly schedules within the allotted time and to change them at will without interfering in any way with the schedules of other services. All required teaching in pediatrics during the junior year, except one weekly lecture for the entire class, is carried out in the pediatric wards, in the clinical laboratory and in small seminar rooms. The required course for the senior year consists of practical training in the pediatric outpatient dispensary and in special clinics. One sixth of the senior class is assigned to the department for one-half day over a period of six weeks. In addition to the required courses, electives are offered each quarter term for students who are interested in doing some original research or in obtaining more detailed information than that offered in required courses.

It is obvious from the foregoing delineation of the pediatric field that extensive provisions in the way of faculty, clinical material and library and laboratory facilities must be provided if the undergraduate teaching program is to be carried out in the most efficient manner. The faculty that is made up of both full time and part time, or practicing, members is in the best position to provide a complete and well balanced course of study and training. In addition to an ample supply of miscellaneous pediatric patients in the outpatient dispensary and in the

wards, it is highly desirable, if not essential, to provide special inpatient or outpatient clinics for instruction in (1) complete well baby care, (2) rheumatic fever and various types of heart disease, (3) allergy, (4) nutritional, endocrinologic and metabolic disorders, (5) child psychiatry, (6) hematology, (7) communicable diseases, (8) dermatologic and venereal diseases and (9) disorders requiring surgical procedures. Where possible, the direction of teaching in each of these special clinics should be assigned to a full time or part time staff member who is particularly well trained in that aspect of the field. Part of the teaching can be entrusted to members of the resident staff who have had special experience in the clinic.

Clinical laboratory facilities should be readily available, and students on clinical clerkships should be required to carry out the usual qualitative, and many of the quantitative, laboratory tests on the patients assigned to them. It is highly desirable that they be given an opportunity to assist the interns, residents or others with all the special procedures, such as blood transfusions or parenteral administration of fluids, lumbar punctures, biopsies of bone marrow and fluoroscopic, electrocardiographic and electroencephalographic examinations. They should, of course, be held responsible for such routine duties as skin tests, taking material for bacterial cultures and making cell counts of the blood and cerebrospinal fluid in the patients assigned to them. Weekly attendance at pediatric-roentgenologic and pediatric-pathologic conferences should be required.

Finally, it is highly desirable that students working about the wards and laboratories where original research is being carried out be told what is going on in a manner that will give them an insight into the ways of clinical and laboratory investigation. If done properly, such explanations may give many of them an abiding interest in the new advances in medicine and in promoting research by whatever means they can. A few will be inspired thereby to pursue careers in clinical teaching and investigation.

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UNDERGRADUATE AND POSTGRADUATE PEDIATRIC EDUCATION IN MEDICAL SCHOOLS

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NO MEDICAL school has a completely satisfactory answer to the question of adequate undergraduate and postgraduate pediatric education. The problems of each medical school differ from those of others. Only through a study of the experience of all the schools, now being compiled in the survey conducted by the American Academy of Pediatrics, can the pediatric curriculum be improved. The following twelve subjects, and perhaps others, must be considered:

1. *Objective.*—The objective of pediatric education is, or should be, to provide better medical care for children. Over 90 per cent of the children in this country, especially those in rural areas, are cared for, not by pediatricians, but by general practitioners.[1] The hope that the increasing number of pediatricians might satisfy the need is futile. For example, the recent survey in North Carolina conducted by the Academy of Pediatrics indicated that the pediatricians represented only 3 per cent of the medical profession, that they were located in the larger towns and that they provided only 7 per cent of the total volume of the child care of the state.[2] For the country as a whole, it is obvious that the present 4,208 pediatricians (2,648 of whom are certified by the American Board of Pediatrics), or even the additional several thousand who will be trained in the future, cannot furnish adequate care for the 35,143,000 American children, 48 per cent of whom live in rural areas. It also is obvious that the public will get medical care, by regimentation if necessary. Therefore, more attention must be paid to the pediatric needs of the general practitioners and less, if need be, to the training of pediatricians.

The medical schools must study this question of the need for rural general practitioners. After all, the chief reason for medical education

From the Department of Pediatrics of Duke University School of Medicine and Duke Hospital.

1. Medical Education in the U. S. A., 1934-1939, report of the Council on Medical Education and Hospitals of the American Medical Association, Chicago, American Medical Association, 1940.

2. Report of the Study of Child Health Services in North Carolina, American Academy of Pediatrics, 1947.

is the need for physicians and medical service. At present the medical schools are failing to provide family physicians. The training for general practice is, or should be, largely the responsibility of the pediatric departments of the medical schools. Pediatrics is more closely related than any other specialty to general practice. Family physicians spend a large proportion of their time in pediatric practice. Bass recorded that over 20 per cent of the daily work of physicians in general practice in Louisiana was with children,[3] in North Carolina it was 34 per cent,[2] and the experience of others has shown that as high as 60 per cent of family practice is in the group below 15 years of age.[4] Pediatric departments must make greater efforts to train the physicians who will supply more than 90 per cent of the child care of the nation.

Most of the pediatric departments in this country still devote their major efforts to the training of pediatricians. The present pediatric curriculum usually is based on the assumption that most medical students plan to enter a specialty. It furnishes a few hours of instruction required for all the students, with an ample provision of electives for those who intend to become pediatricians. Now greater needs have arisen—the laying of a sound foundation for a student's development in pediatrics as a basis for general practice and the provision of short, intensive pediatric courses for physicians who have been in general practice for several years. Improved teaching of pediatrics in the medical schools will enable many of the present graduates to go into general practice with a more practical knowledge of the subject than some of the interns in the children's hospitals had a generation ago.[5]

2. *Methods of Pediatric Education.*—Too much emphasis has been placed on the teaching and too little on the learning of pediatrics. According to psychologists, students remember most of the things they do, some of those they see and only a few of those they hear.[6] Therefore, medical students should be allowed to learn under supervision, rather than to be taught didactically. At any rate, our curriculum at Duke University is built on that theory, and the students seem to acquire a durable knowledge of pediatrics from their assignments as clinical clerks to the children's ward and nursery and to the pediatric outpatient, child guidance and well baby clinics for eleven weeks during their senior year.

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3. Bass, C. C.: Relative Proportions of Diseases and Conditions Treated by our Graduates in Their Practice, South. M. J. **21**:1049-1054 (Dec.) 1928.

4. Davison, W. C.: Pediatrics—What Is It? J. Pediat. **3**:64-77 (July) 1933.

5. Davison, W. C.: The Future of Pediatrics, J. A. M. A. **117**:2283-2284 (Dec. 27) 1941.

6. Kinder, J. S.: Visual Aids in Education, Rev. Educ. Research **12**:336-344 (June) 1942. Stenius, A. C.: Auditory and Visual Education, ibid. **15**:243-255 (June) 1945.

3. *Scope and Sequence of Pediatric Curriculum.*—In addition to their practical duties as clinical clerks, students participate in practical nursing procedures, in the preparation of diets and in conferences with the preclinical faculty. The junior students also have weekly ward rounds for eleven weeks, covering introductory pediatrics and the physical examination of infants and children.[3] While on their medical quarter, the seniors attend weekly ward rounds in the children's ward. Both the junior and the senior students have weekly pediatric clinics for thirty-three weeks—a total of four hundred and seven hours (8 per cent of the total hours in the curriculum). Actually, these students spend considerably more time than this, because during their senior pediatric quarter they are on call for night and Sunday admissions. However, even with this allotment of time, pediatrics cannot be covered completely. Audiovisual aids are used wherever possible. Emphasis is placed on the care of normal infants and children, on the diagnosis and treatment of the 63 diseases which are amenable to therapy and which cause 21 per cent of the pediatric deaths and on the prevention of the 37 conditions which cause 56 per cent of the deaths in children and which can and should be prevented.[4] The students are given a list of all the diseases of children, which contains the remaining 229 conditions to which children are heir and which cause 23 per cent of the pediatric deaths. As children with these 229 diseases usually recover or die regardless of therapy, these conditions are not stressed. The students are encouraged to fill in the gaps through the reading of pediatric journals and books. Most of them do, but no one yet has discovered a method of convincing students that reading in medical school, and later in practice, is the basis of a continuing education. The ward rounds of the junior year in which the students acquire an acquaintance with pediatric physical diagnosis, the weekly ward rounds with the seniors on their medical quarter and the formal clinics could profitably be eliminated and all combined into a senior pediatric quarter. The pediatrics which the students learn is acquired on the ward and in the outpatient clinic, when as clinical clerks they really act as interns under supervision.

Students, during their pediatric quarter, are offered the opportunity of spending an elective preceptorship of one or two weeks with a competent rural family physician, in the hope that more of them will enter that field.[7] All our students also are encouraged to spend one term at another medical school in this country or in England, generally

7. Kerr, W. J.: A Unique and Promising Experiment in Medical Education, California & West. Med. **24**:465-474 (April) 1926; Experiment with the Preceptor System, Bull. A. Am. M. Coll. **2**:289-291 (Oct.) 1927.

in their senior pediatric quarter. Not only do the students profit from this migration, but they bring back new ideas which help the rest of us.[8]

4. *Minimal, Maximal and Optimal Portions of Curriculum Required by Pediatrics.*—The shortest required pediatric course which I have found in any medical school consisted of eight lectures and demonstrations on the growth, physiology and general symptomatology of infants and children for second year students; eight lectures and demonstrations on the feeding of infants and the nutritional disturbances of infancy for juniors, and sixteen pediatric clinics for seniors, a total of forty hours. The required course at this school has now been lengthened to sixty-four hours of pediatrics and sixty hours of lectures on contagious diseases. The question of the optimal number of pediatric hours in relation to the other requirements of the curriculum and of whether the four hundred and seven hours in our school are too many or the sixty-four hours in some schools are too few is not nearly so important as is the type of program, as mentioned previously. The national average is two hundred and eighty-five hours, which represents 5.8 per cent of the average total number of hours in the four year curriculum.

5. *Relation of Pediatrics to Other Subjects of the Curriculum.*—The two clinical years in most medical schools consist of six terms of three months each. The medical and surgical departments usually take four of these—two each in the junior and senior years to leave only six months for psychiatry, pediatrics and obstetrics—either with the time scattered through the two clinical years, or preferably in a solid block in the junior or senior year. The psychiatrists, pediatricians and obstetricians rightly feel that two months each is too short a period for their subjects and that a minimum of three months each should be available. There are two alternatives: (1) a reduction in the amount of time allocated to surgery, for which there are many arguments, especially if it is hoped to reduce the number of specialists and to increase the percentage of general practitioners, and (2) the addition of three months to the clinical years by inserting a required term between the junior and the senior year, a schedule which several schools have already adopted.

6. *Place of the Pediatric Assignment in the Schedule.*—Pediatrics should be scheduled in a solid block in the wards and the clinics during the senior year, not only for the convenience of the faculty, but also because pediatrics is a combination of preventive medicine and general practice, with an age limit. The more medicine, psychiatry, surgery, ophthalmology, otolaryngology, orthopedics and urology a student knows, the better can he learn pediatrics. The pediatric department

8. Davison, W. C.: Medical Student Migration, J. A. Am. M. Coll. **21**: 327 (Nov.) 1946.

can and should integrate the instruction in all fields. At present, the juniors at Duke University have pediatric physical diagnosis and clinics, but, as mentioned previously, all the work should be combined in the senior pediatric quarter.

7. *Elective Courses in Pediatrics.*—One experiment in medical education, which I am sorry to say failed, was curtailing the required courses and liberalizing the curriculum so that more time was free for elective work in any field the students desired.[9] However, they did not seem to appreciate these electives and kept asking the faculty, "What do you recommend?" To answer this question we were forced to study more thoroughly the needs of the public and hence the needs of the students.[10] The elective rural preceptorship mentioned previously seems to be successful.

8. *Composition of the Pediatric Staff.*—In order to meet the joint obligations of instruction, research and the care of ward and private patients, as well as enable the students to have a better grasp of practical pediatrics, the pediatric faculty should be composed of full time and part time members. The former receive no income from private patients. The part time staff treats private patients and shares in the fees collected so long as private practice does not interfere with the primary duties of instruction and research. A satisfactory pediatric faculty consists of 9 persons—3 on full time and 6 on part time. In addition to being a good clinician, each member should have a major interest, e. g., in biochemistry, metabolism, electrolyte balance, bacteriology, infectious diseases, psychiatry, child guidance, child behavior, speech defects, sociology, growth and development, nutrition, newborn and premature infants, syphilis, allergy, preventive measures or administration. Furthermore, competent and successful general practitioners should be given staff appointments on each specialty service in teaching centers, to act as advisors to the chief of that service in regard to those parts of his specialty which should be emphasized in the training of general practitioners. This recognition of the general practitioner would do much to improve his status in the minds of patients and young physicians.[11]

9. *Amount of Pediatric Budget.*—No ideal solution to the question of budget and salaries has been discovered. In a university, every one believes he is more valuable than his colleagues. Full time salaries usually range from $2,500 to $20,000, depending on previous training,

9. Davison, W. C.: Liberalizing the Curriculum, South. M. J. **21**:983-937 (Dec.) 1928.

10. Davison, W. C.: The Future of Medical Education, J. A. Am. M. Coll. **21**:223-235 (July) 1946.

11. Thompson, S. A., and Thompson, S. B.: The Status of the General Practitioner: Present and Future, J. A. M. A. **131**:514-518 (June 8) 1946.

and part time salaries from $100 to 3,000, on the basis of the amount of time devoted to instruction and research. Every member of the staff should have a salary, even though it is so small as to be only a token payment. A satisfactory working budget is $45,000. The national average is $39,600, which is 6.6 per cent of the average total budget of the medical school. All medical schools, especially those which are not state supported, need funds for maintenance and salaries. Research grants are available from many sources, private and government, in amounts undreamed of before the war. However, all schools are having difficulty in providing for the bare necessities for adequate instruction and for the training of personnel. The present salaries of instructors, nurses, technicians and secretaries are not meeting the increased cost of living. There is plenty of the cake of research but too little of the bread of sustenance, to paraphrase Marie Antoinette. As recently expressed by Dr. Raymond B. Fosdick, "We cannot grow orchids in a greenhouse that lacks coal." [12] Medical schools must seek federal aid, and a reasonable return for this assistance will be emphasis on supplying more family physicians, especially for rural areas.

10. *Size of an Adequate Pediatric Service.*—There is no standard formula for an adequate number of pediatric beds per student, intern or resident. If the service is too large, every one spends too much time in routine care; and, of course, if there are too few patients, no one learns much. In my opinion, more pediatrics is learned from a small service, intensively studied, than from a plethora. For example, at Duke we have only 36 medical beds and 27 surgical beds for children, 50 bassinets for newborn and premature infants and an outpatient service with a daily average of 30 patients. Yet at present we have 15 to 25 senior students every term, 6 interns and 6 residents. Though this pediatric service is small, the wealth and variety of the clinical material are really astonishing. The number of patients with common and minor illnesses is adequate. Furthermore, almost daily some rare disease is encountered, for many of the difficult cases from North Carolina and the surrounding states, with a combined population of 10,000,000, are sent to Duke. At any rate, the staff and students are kept busy and seem to learn a fair amount of pediatrics.

In order to provide as many pediatric residencies as possible for returned medical officers, affiliation with other pediatric services has been necessary and desirable. At present, in addition to the usual house staff of 12, 15 returned medical officers are obtaining pediatric training. Of the interns and returned medical officers, 5 are assigned in rotation to the Sydenham Hospital in Baltimore, the Willard Parker Hospital in New York and the Charity Hospital in New Orleans. Two or more of

12. A Review for 1946, New York, The Rockefeller Foundation, 1946.

the returned medical officers also spend two months in rotation on the pediatric services of several cooperating hospitals in the state, thereby obtaining a broader training in pediatrics than would be possible at one institution.

11. *Pediatric Research.*—Not only the pediatric faculty, but also the students, interns and residents, are encouraged to undertake some investigative activity, in the hope that a few of the more inquisitive may continue. Research is necessary, not only to increase medical knowledge, but also to stimulate the staff and students.[13] During his senior pediatric quarter, each Duke student writes two comprehensive papers on some subject or disease suggested by his patients, or he undertakes a research problem. With the stimulus of the Mead Johnson, Borden, Bagby, Mosby and other awards several excellent papers are prepared each year and published in medical journals. The student, through these papers, learns to use the literature and acquires some facility in writing —the great advantage (or disadvantage) of the Oxford tutorial system. The results of the student's research may not be important to others, but he himself will gain the medical satisfaction of knowing more than anyone else about a small point or two. He also will learn the difficulties and pitfalls of research and develop critical judgment and a healthy scientific skepticism as an antidote to the credulity so easily bred by detail men from the pharmaceutical houses. If his paper involves an analysis of patients' histories, he usually is impressed with the necessity of writing better histories of his own patients. Furthermore, research is of great lasting educational value, emphasizing Carter Davidson's distinction between education and training. The former, if it includes research, acquaints the student with ways of analyzing problems he has never seen before, while training merely teaches him to perform an act of imitation.[14]

12. *Postgraduate Training for Pediatrics and General Practice.*—The only postgraduate education in pediatrics, or in any other field for that matter, which is really effective is that given to house officers in the hospitals. All medical school graduates, especially those who desire to enter general or country practice, should be required by their schools or the state licensing boards, preferably the former, to spend two years in hospital or laboratory work.[15] More hospitals, especially the teaching hospitals, should organize two year "mixed" internships covering medicine, psychiatry, obstetrics, pediatrics and surgical diagnosis, which

13. Weed, L. H.: Some Tenets of Medical Education, Bull. Johns Hopkins Hosp. **45**:203-214 (Oct.) 1929; Experimentation in Medical Education, South. M. J. **24**:1116-1121 (Dec.) 1931.

14. Davidson, H. C.: Literate but Ignorant, Time, **49**:58 (June 23) 1947.

15. Hanes, F. M., and Davison, W. C.: Postgraduate Medical Education and Internships, J. A. Am. M. Coll. **16**:371-374 (Nov.) 1941.

are designed to train graduates for general practice instead of being planned primarily for specialist training and the convenience of the teaching staff.[16] The need for these two years of "mixed" internships is indicated by the fact that 40 per cent of the interns in pediatrics at Duke Hospital have gone into other fields.[5] The teaching hospitals and medical schools also must provide more postgraduate "refresher" opportunities for the family physicians in their vicinity. More residencies in pediatrics also are necessary for the graduates who wish to go into pediatrics after completing a "mixed" internship. In spite of the great demand for family physicians, practicing pediatricians always will be needed, as the clinical problems of children differ from those of adults.[17] Pediatric teachers and members of state and federal health organizations also are required in order to perpetuate and increase the advances made in preventive pediatrics.[18]

CONCLUSIONS

1. The objective of pediatric education is to provide better child care.

2. Over 90 per cent of the child care of the nation is supplied by family physicians.

3. Pediatric education, both undergraduate and postgraduate, must lay more stress on the training of general practitioners, particularly rural physicians, if child care in this country is to be improved.

4. More emphasis should be placed on giving medical students an adequate opportunity of learning pediatrics from patients rather than on teaching the subject by didactic and other methods.

5. The undergraduate schedule of pediatric training should contain a solid block of three months in the wards and in the clinics during the senior year.

6. More postgraduate training in pediatrics for general practitioners should be organized.

Duke Hospital.

DISCUSSION

DR. H. K. FABER, San Francisco: Back of all our thinking in pediatrics is the growth and development of the body and the growth and development of the mind. How these processes may be taught best is a subject which I have asked Dr. Harold C. Stuart to discuss.

16. Davison, W. C.: Rural General Practice in Groups, J. A. Am. M. Coll. **23**: 180 (May) 1948.

17. Sweet, C.: Opportunities in Pediatric Practice, J. A. M. A. **111**:893-897 (Sept. 3) 1938.

18. Veeder, B. S.: The Position of Pediatrics in the Present Day Practice of Medicine, Pennsylvania M. J. **44**:1233-1239 (July) 1941.

DR. HAROLD C. STUART, Boston: Dr. Alan Aird Moncrieff, of the University of London, who is our guest this afternoon, has recently edited a small book for the practitioner entitled "Child Health." I was interested while reading this book to observe that there was rarely mention of the words "growth and development"; yet all through it emphasis was placed on the point which Dr. Wilburt C. Davison has just made, namely, that the practitioner of the future must be far more competent in handling infants and children than he is today. Hence, much more of his time must be devoted to their study and care, both in health and in sickness.

We use the term "growth and development" in this country, possibly unwisely, to cover the basic, or background, knowledge which is necessary to differentiate between the care of the infant, or child, and that of the adult. Among the subjects which, in my opinion, are properly covered by this division of pediatric instruction are: (1) normal course of growth and development, with consideration of variability; (2) interpretation of the physical status at each age, i. e., by physical examinations, measurements, roentgenographic studies and laboratory determinations; (3) effects of immaturity and of growth on food and other requirements, as well as the nature of these requirements; (4) effects of growth and development on functional capacities and on the incidence and course of diseases; (5) effects of faulty nutrition, lack of care and disease on growth and development; (6) developmental defects (diseases which are essentially disturbances of growth should be taught in connection with diseases of childhood), and (7) relation of these abnormalities to the practical problems of health appraisal and advice to mothers.

If viewed in this manner, the subject of growth and development provides a broad background for pediatrics. This subject may be considered from the standpoints of basic training and in its application to pediatric instruction. Obviously, the student should come to pediatrics for his applied training in this field with more knowledge of the basic sciences pertaining to it than is customary today. He should know, for example, something of the early course of growth and development from his study of embryology and should be more familiar with medical genetics and the disturbances which may occur during fetal life. He not only should study the adult cadaver in anatomy but also should have demonstrations when possible of the infant and child. He should have demonstrations of the course of postnatal growth and development, so that when he comes to applied pediatrics he will be better fitted to deal with infants and children—to recognize what they should be like at various ages and how they should change with growth and development from one age period to another. I understand that Dr. Alfred H. Washburn has put into composite form, suitable for presentation on lantern slides, some of the very complete records of the growth and health of children which he has assembled and which he has found valuable for the preclinical presentation of this subject.

My primary concern at this time is with the teaching of applied growth and development when the student comes to his clinical pediatrics. This instruction may be given to best advantage in connection with health services for children, for in this way its practical importance is emphasized. The student must learn to consider the infant at the time of his examination in regard to his past progress in growth, as well as in respect to his present status and needs. This teaching may be carried out most effectively in health conferences which follow infants and children from period to period. In this way one can use background knowledge of the child and show from past history and records of past examination what he was like at earlier ages and not consider him simply at the moment.

With organized demonstrations of newborn infants, young infants, older infants and preschool children to groups of students, one can give a picture of the problems commonly encountered in taking care of children of each of these ages, of history taking, of the conduct of the health examinations and of taking and interpreting measurements. These demonstrations should be made with the mother and child present, and the practical value of these procedures should be shown through the advice and instruction given the mother at the end of the examination. One can show thus what the purposes of health histories and examinations are and, more particularly, how the physician approaches and deals with the mother, the infant and the child. After this orientation through demonstrations, the student must be given an opportunity to follow them with practice in the use of these technics.

Teaching health conferences therefore must be organized so that the student can talk with the mother, examine the child, relate the child to various norms, draw his conclusions and then practice the interpreting of his observations and the giving of advice to the mother. All these steps, of course, must be done under supervision. In my opinion, if students had this background when they came to deal with sick children, they would be far more competent in outpatient departments and in work in the wards than they are today. During the initial period of pediatric training, students may be shown simple examples of diseases of childhood as portrayed in the textbook, as Dr. Rustin McIntosh recommended, but the problems of advanced pediatrics, that is, the difficult diagnostic problems, should be reserved until after this initial training has been completed. If the course in pediatrics is divided as it is at present, advanced pediatrics should be reserved for the fourth year.

DR. ARNOLD L. GESELL, New Haven, Conn.: In order to get the student's view of this problem, I have engaged in several conversations with medical students themselves.

I gather from them that so far as preclinical instruction is concerned they like to get it from clinical men whenever possible and to have it pointed up along the way in relation to actual clinical applications. They also favor the use in some way of an organ-system approach to the field of medicine—a functional approach which preserves natural unities and which is not based on the somewhat artificial separation into traditional disciplines. In that sense students are interested in closer correlations. There is a great deal in Dr. McIntosh's point that correlation not only is an intellectual matter but also depends on sincerity of attitude.

If correlations are built around basic central themes, there will be more genuine interest and insight. Take, for example, the central nervous system, or, better still, the neuromotor system, with perhaps the endocrine glands included. Make that a trunk line of pursuit in clinical knowledge, and I think there would result new forms of medical education.

In embryology likewise there are untapped possibilities. It is more or less a stepchild at present, but it could easily be made the basis of significant organizations of knowledge concerning mental, as well as physical, growth.

I have been asked to talk briefly on the problem of behavior development. Behavior is always present, in every situation, whether the baby is well, handicapped or sick. In that sense it can always be expounded in immedjate context, and so it should be. Behavior can be considered in terms not only of maturity tests but also of symptoms, because behavior patterns have great symptomatologic significance. However, in my opinion, one cannot rely too much on incidental correlation in this field.

If development, as well as disease, falls within the scope of clinical pediatrics, then the subject of behavior must be given special status, particularly in the teaching hospital and in the medical center. It can be given such status only by setting aside a separate diagnostic unit in charge of an experienced clinician who is imbued with the science and philosophy of development.

Such a specialized type of developmental pediatrics can function in preventive health service and also in relation to complex cases of maldevelopment requiring multiple and differential diagnosis.

In closing, I should like to call attention to a development, still in its early stages, which I think has promise. Some of the gaps in undergraduate medical education can be filled by audiovisual methods. This age is a technologic one, and pediatric teaching ought to begin to use these devices more systematically.

The executive council of the Association of American Medical Colleges has established a committee on audiovisual aids. The committee held its first meeting at Washington, D. C., on Jan. 3, 1947. On the same day the committee also met with a federal interdepartmental committee composed of representatives of the War Department, Navy Department, Veterans Administration and the United States Public Health Service. The committee agreed on a cooperative plan. The Inter-Departmental Committee undertakes to place at the disposal of the Association of American Medical Colleges its combined resources. In return, the Association of American Medical Colleges would establish and maintain a Medical Film Institute and professional specialists from the faculties of medical schools. The resources of the Inter-Departmental Committee are considerable. The combined annual budget exceeds $3,000,000 for the production of visual aids. The capital investment for production facilities exceeds $20,000,000. This program, if realized, will gain momentum from the war experience, which amply demonstrated the potency of audiovisual education.

DR. H. K. FABER, San Francisco: I have asked Dr. John R. Hubbard, director of the Academy survey of child health services, to speak to us and to discuss the topic of today.

DR. JOHN P. HUBBARD, Boston, and Washington, D. C.: It is highly appropriate that we bring before this society some of the early results of our study of child health services, since I understand the study originated from within this society. However, some of our early results are tentative and subject to revision and correction as we progress with our study, which is now at about midflight.

We have, in general, two sources of information so far as pediatric education is concerned, first the collections of information in each of the states. I have picked out one item which is shown on the first slide.

(Slide) These data show the hospital training received by general practitioners and pediatricians. Dr. Wilburt C. Davison, wisely in my opinion, brought the general practitioner into the picture. It is he who gives by far the greatest amount of care to children; yet 16 per cent of general practitioners have received no hospital training after graduation from medical school, and 45 per cent have received no pediatric training, by which we mean less than one month.

Even among those who limit their practice to pediatrics—in that group, fortunately, nearly all have had some hospital training—23 per cent has received less than one year of pediatric training in hospitals after graduation from medical school.

The bulk of our information is coming from that part of the study to which Dr. James L. Wilson referred, that which we call the study of pediatric education. The process which we have adopted is making personal visits to each of the 70

approved medical schools. The visits are being made for the most part by Dr. and Mrs. John McKenney Mitchell. They interview the dean, the chief of the department, the instructors and, rather particularly, the students themselves. They sit in on lectures and attend ward rounds and demonstrations, spending two or three days in each school in order to get a real feel of the atmosphere of that school.

There are two schedule forms which we are using in the course of this part of our study. We happen to call them schedule 4-A and schedule 4-B. Many of you are already familiar with them.

I have picked out only one or two items from the schedules of those schools which have been visited to date. The question of the budget has been mentioned, and that is shown on the next slide.

(Slide) There is a wide range in the budget of the pediatric department. Dr. Mitchell and I were somewhat startled, in a visit to one pediatric department, to learn that there was no budget whatever for the department. We were even a little more startled to hear the chief of the department confess that he was quite satisfied with his situation. On the other hand, there are budgets running up to $200,000. The average is $39,600. I feel that is hardly a fair figure, because it is brought up to an unduly high mark by those relatively few schools which have the wealthier departments. The general over-all picture seems to be that the budget for the pediatric department constitutes on the average almost 5 per cent of the total for the medical school.

(Slide) This slide shows in brief the status of the chiefs of pediatric departments. Of those schools that were visited by the time this analysis was made, about half of the chiefs were on full time status; 11 were on part time status, giving approximately one quarter of their time to the department, that is, two hours a day, or ten hours a week; 83 per cent of the department chiefs have been certified by the American Board of Pediatrics. Some 90 per cent are members of the Academy; 41 per cent, members of the American Pediatric Society, and 17 per cent, members of the Society of Pediatric Research.

Of all members of the pediatric departments of those same schools, of which there are about 300, only 38 per cent have been certified by the Board; 28 per cent are members of the Academy; 13 per cent are members of the American Pediatric Society, and, again, 13 per cent are members of the Society of Pediatric Research.

(Slide) This slide shows in brief general terms the time spent in pediatrics by the student, based on averages for 27 schools. There is little time in the freshman and sophomore years, which is to be anticipated; the average is 104 hours for the junior year, 174 hours for the senior year and 285 total hours for the four years; in the senior year, therefore, 13.6 per cent of the hours is devoted to pediatrics; in the junior year, 8.5 per cent, and for the curriculum as a whole, 5.8 per cent.

These are a few of the items which we are obtaining. These, and many more, we shall continue to study, so that by the end of another few months to a year we should have a complete and detailed picture of what is being taught in departments of pediatrics, and, perhaps even more significant, what is not being taught.

DR. H. K. FABER, San Francisco: I hope that Dr. Lee F. Hill, president of the American Academy of Pediatrics, is here and that he will give us his views on the subject.

DR. LEE F. HILL, Des Moines, Iowa: I should like to say a few words in general about the program in which the American Academy of Pediatrics is currently engaged. As most of you know, the survey on pediatric education, about

which Dr. John P. Hubbard has just spoken, is a part of a general survey on children's medical facilities and services which had its inception in St. Louis in November 1944. At that time most of us thought that a budget of $7,000 or $8,000, or at most $10,000, would be adequate to collect pertinent data from which conclusions could be drawn.

I think all of you are familiar with the fact that the budget which we estimated earlier at $7,000, $8,000 or $10,000 is now somewhere in the neighborhood of $1,000,000.

The mass of statistical material which has been collected by Dr. John P. Hubbard and his executive staff, under the direction of Dr. Warren R. Sisson's committee, has progressed far beyond what any of us at first anticipated. Many of us in the Academy who have been in close touch with the survey feel that it offers a real opportunity for progress in social medicine. Many of you are aware, too, that the reason for undertaking the study in the first place was the hope that some type of cooperative program between physicians and the governmental agencies might be developed on which all could agree. So long as governmental domination of pediatric practice threatened, only opposition and disagreement could be expected. The purpose of the study was to demonstrate the deficiencies and the needs in the field of child health as a basis for agreement.

It is evident, of course, that the mere collection of data, without a continuing plan of action, would be a calamity, and the Academy, I am sure, is determined that that shall not happen.

A continuing committee has been appointed under the chairmanship of Dr. James L. Wilson, with nine members, as had the original committee.

It is the view of those in the Academy that Dr. Wilson's committee will have a long range task and that the problems which will be presented to it will be important and far reaching.

This afternoon has been devoted largely to a discussion of undergraduate education in pediatrics. Certainly this is basic to any consideration of improvement in the health of the children of the nation. I may say for the Academy that we are enthusiastic about the prospect of worth while accomplishments as the result of the work that is being done. In fact, we believe it is the most important task the Academy has ever undertaken.

DR. CHARLES HENDEE SMITH, New York: I do not know whether this society is interested in hearing from a "has-been," but I cannot resist the impulse to speak in general of the failures of medical education.

My qualifications for speaking on this subject are several: first, by almost half a century of practice; second, by observing interns from many medical schools; third, by seeing patients in consultation and noting the way they are handled by other physicians, and, finally, by serving on a state board which examines men on their applications for license to practice.

I should like to call to your attention a few subjects which in my opinion are not so well taught as they should be. First is physical diagnosis. The candidates on the state board examination regularly give answers that are about 20 per cent correct on such fundamental questions as: "Describe the second heart sound in aortic regurgitation, in pulmonic stenosis; describe the first sound in mitral stenosis." One definition given of the term "sibilant" was: "You ask a patient how many children she has and how many sibilants."

Functional murmurs are apparently unknown to the average physician. In the practice of pediatrics I have seen child after child kept in bed for six months and carried up and down stairs who had only a simple, obvious functional murmur.

Second is the treatment of acute illness. Men who go into practice have no idea of the way in which to handle an ordinary sick child in bed. Here I must differ from the statement that the part time teacher is a detriment to the medical school. In my opinion, he is one of the greatest assets to a pediatric teaching staff, because he knows what the man needs in the field of private practice.

Third is drugs and dosage. Children are being overdosed all over the country because of the medical curriculum in which drug dosage is taught in the second year and mighty little thereafter. Several of the schools are adding refresher courses on dosage in the fourth year. When such a course was introduced into one school, it was thrown out because the professor of medicine said, "They will get all that when they get out in practice." How do they get it in practice? Within a few weeks an intern gave a serious overdose of morphine to a woman on that very service. I have seen a number of children in the last year or two overdosed with various drugs, sometimes with serious effects, because the practitioner was not taught how to reckon dosage of drugs for children.

Fourth is infectious diseases. Dr. Rustin McIntosh mentioned the seasonal incidence of disease in general, and here is an excellent example. Cases of measles are not often seen in the summer or in an off-measles year; yet one of the first questions a man in practice has to answer is, "what is the incubation period of measles?" The answers given on the state board examination on infectious diseases are pitiful, literally pitiful. The candidates know nothing about the infectious period, the incubation period or the symptoms of infectious diseases. Why? They are sent to the hospital for infectious diseases for a few exercises, and if there does not happen to be adequate material, they receive no experience.

Finally, I should like to stress the feeding and handling of young infants. In too many hospitals, in most hospitals other than teaching hospitals, the nursery for the obstetric service is under the obstetrician, and the pediatrician is never brought in except when the patient is dying. That still is true in several of the great medical centers, in which the pediatrician has no influence or authority whatsoever in the nurseries for the newborn. How can he teach the handling or the feeding of the newborn?

What is the result? Only 5 to 15 per cent of babies in the small hospitals throughout this country, where most babies are delivered, are breast fed. The formulas which are given are regularly too strong—formulas given by detail men from evaporated milk companies, which disregard the known fact that infants require little food in the first two weeks of life. The hideous series of epidemics of diarrhea of the newborn, with a large number of deaths, is an inevitable consequence.

These are a few of the aspects in which present day medical education is weak.

DR. JOSEPH STOKES JR., Philadelphia: A sufficient amount of emphasis is not being placed on the training of the medical student in the social sciences. In respect to premedical training, the medical students are usually selected from men with a particular interest in biology, chemistry or physics, whereas, it seems to me, in premedical courses it is as essential to foster an interest in the humanities and in the social sciences as to stimulate an interest in physics, biology and chemistry.

Medical school curriculums are arranged so as to recapitulate the history of medicine in much the same way that the fetus in its development recapitulates the history of the human race. Thus, a curriculum starts with anatomy, chemical anatomy and pathology, failing sufficiently to emphasize early in the course the point that these men are being trained primarily to prevent disease and to apply their knowledge of medical science toward such prevention. The medical student

does not have a fundamental interest in the application of what is known in science to the fields of the prevention of disease and the promotion of health, because he so often lacks interest in the social sciences and rarely is exposed sufficiently early in his medical course to the field of social medicine. Medicine has within its grasp the elimination of diphtheria, or even of tuberculosis, if everyone's chest were examined roentgenographically at regular intervals, as well as the elimination of a number of other diseases, if medical students were imbued early with the proper social attitudes.

The present method of recapitulation should be reversed and the medical student started with a course in social studies as related to the place of medical science in the promotion of health and in the solution of all the problems connected with growth and development. Examinations are absolutely necessary for medical students in these subjects during the early years, so that they may realize the importance of such studies in the curriculum. A more vital interest will thus be aroused.

I should like to emphasize another point, which it seems to me is important, namely, that the poorest to the wealthiest of medical schools actually are being starved of younger men because of the schools' inability to offer them a stable income. Most medical schools depend now for many of their salaries in the field of research on one, two or three year grants. As a group, educators must support any effort that is made to gather such funds together for the development of younger men.

Also, I should like to mention that we do have correlation clinics at the University of Pennsylvania School of Medicine, between anatomy and pediatrics and between physiologic chemistry and pediatrics, in the first two years, which are helpful. We teach in the wards during the third year and in the outpatient department in the fourth year.

It is possible to conserve the funds of the medical school and to assist other clinical departments by such facilities as an Rh-typing center, a virus diagnostic laboratory—interests which are peculiarly pediatric—and by a nutritional service developed jointly with the department of medicine in which determinations of vitamins may be carried out and which is as necessary to medicine as it is to pediatrics.

One man from the department of physiologic chemistry works in our laboratories in charge of one study, and another attached to pediatrics works in physiologic chemistry, teaching in that department. We also have had joint appointments of pediatricians in the departments of biophysics and bacteriology. An interchange of appointments among the various clinical departments is helpful.

DR. JOSEPH B. BILDERBACK, Portland, Ore.: As a representative of a small school 3,000 miles from here, I should like to know what we shall teach our students. Most of them will become general practitioners. Few from any school will become pediatricians.

As education we should like to graduate from the medical school young men able to recognize the common diseases of childhood and to treat them intelligently, who will be able to diagnose pyloric stenosis, empyema and other conditions, so that it is not necessary for the patient to pass through the hands of several physicians before a proper diagnois is made.

I agree with Dr. Weech that it does not require intellectual attainment to diagnose 95 per cent of the sick children. However, they do require close supervision and proper management for the best results. Often children are critically ill, but a diagnosis does not always mean a cure. The remaining 5 per

cent may be regarded as mental caviar—brain teasers—for the heads of the pediatric departments. This number comprises the interesting cases, those whose illnesses are frequently hard to diagnose and difficult to treat.

A small number of physicians become certified pediatricians. They have had exceptional opportunities for three years, frequently strenuous years. They are well qualified to practice first class pediatrics.

Clinical instructors cannot hope to teach pediatrics in the time allotted in the average medical school, which is 200 hours. A few schools have a maximum of 285 hours, which would represent 36 eight hour days. A man cannot become a mechanic in that time. With the crowded medical curriculum, it is impossible to get more hours for the teaching of pediatrics. Educators must realize that there are other branches of medicine. They must accept the responsibility of doing everything possible in the scheduled hours to fit students to become good physicians in caring for children—the world's greatest asset.

DR. STEWART H. CLIFFORD, Brookline, Mass.: Could a system of correlation in pediatric teaching among the various schools be devised? It has been helpful in my department to receive an occasional informal note from Dr. Borden Veeder, pointing out certain blanks in students' knowledge made evident in the National Board examinations. As a result, the teaching program was altered to cover the deficient zones.

Secondary schools have tried to correlate their teaching programs from the results of the secondary board examinations given generally throughout the country. They are able thus to compare the results of their teaching with those obtained in other schools. It would be helpful if there was a formal, recognized method through which the results achieved in the National Board examinations by students from a given school could be made available for comparison with results for students from other schools. Thus there could be a frequent check on teaching methods.

DR. ARTHUR F. ABT, Chicago: While listening to the discussion, I have heard nothing about the historical aspect of pediatrics. The specialty of pediatrics is a young one, and for some of the emeritus and older members it coincides with their life span. Several modern textbooks of pediatrics start their bibliographies from 1940.

When I joined the medical service of the Navy I was made to take a correspondence course, in which I learned that the Navy, at least, honored its history. I was told of John Paul Jones, Farragut and Mahan and of their contributions to naval tradition.

I think pediatric education is missing something, and I propose that it would be a good idea for this society to publish a brochure on the history of American pediatrics. Then, at least, the students could know what some of the famous names stood for, the names of the elder Holt, John Lovett Morse, John Howland and Alfred Fabian Hess. Perhaps a student would gain more interest by learning of the development which took place in the past and through the efforts of the pioneers in American pediatrics.

DR. IRVINE MCQUARRIE, Minneapolis: It is unfortunate that many physicians who are engaged in private practice assume that so-called full time teachers in the clinical departments of medical schools live in the ethereal world of scientific investigation and are not seriously interested in the practical aspects of clinical teaching. A proper visit to the average university hospital should convince the most critical observer that this assumption is erroneous. In every institution of the

kind with which I am acquainted, at least half of the full time teacher's day is spent at the bedside, in the amphitheater or in the outpatient division, dealing with patients and students together. Practical problems of diagnosis and therapy, including the doses of drugs, are constantly under discussion. Furthermore, in most departments of pediatrics. a considerable amount of the teaching is deliberately assigned to part time practicing pediatricians in order that students may receive the benefit of the practitioner's viewpoint. I should emphasize that the chiefs of most full time departments are primarily clinicians but that they are at the same time aware of their responsibility and special opportunity to advance medical knowledge.

News and Comment

GENERAL NEWS

Dr. Arvid Wallgren to Be Next Flexner Lecturer.—Vanderbilt University School of Medicine, Nashville, Tenn., announces that Professor Arvid Wallgren, of Stockholm, Sweden, will be the next Abraham Flexner lecturer. Dr. Wallgren will arrive in the United States about March 1, 1949.

In the fall of 1927, Mr. Bernard Flexner, of New York city, gave $50,000 to Vanderbilt University for the purpose of establishing the Abraham Flexner Lectureship in the School of Medicine. This lectureship is awarded every two years to a scientist of outstanding attainment who shall spend as much as two months in residence in association with either a department of a fundamental science or a clinical branch. Previous lecturers have been:

Dr. Heinrich Poll, director of the Institute of Anatomy of the University of Hamburg, Germany

Sir William B. Hardy, director of the Low Temperature Research Station at the University of Cambridge, England

Dr. Francis R. Fraser, director of the medical unit and professor of medicine at the St. Bartholomew Hospital Medical College, London, England

Dr. Erik Gunnar Nystrom, professor of surgery at the University of Uppsala, Sweden

Dr. Thorvald Madsen, director of the State Serum Institute of Denmark

Dr. Albert Szent-Györgyi, professor of medical chemistry and director of the Institute for Medical Chemistry in the Royal Hungarian (Franz-Joseph) University, Szeged, Hungary

Dr. Donald D. Van Slyke, member of the Rockefeller Institute, and Dr. Warfield T. Longcope, professor of medicine, Johns Hopkins School of Medicine, Baltimore

Sir Edward Mellanby, secretary of the British Medical Research Council and chairman, International Technical Commission on Nutrition, London, England

Dr. Wallgren has been associate professor of internal medicine at Uppsala University and head of the department of pediatrics at the Royal Caroline Medical Institute since 1942. He is an honorary member of the American Academy of Pediatrics, Canadian Society for the Study of Diseases of Children, Argentine Pediatric Society and German Pediatric Society. He is co-editor of *Acta pædiatrica* and a member of the editorial board of *Annales pædiatrici, Pædiatria Danubiana, Acta tuberculosea Scandinavica* and *Archiv für Kinderheilkunde.* He is president of the Swedish Association for Children's Welfare, the Swedish Red Cross Committee on Tuberculosis, the National League Against Tuberculosis, the Save the Children Fund, and conseiller to the Swedish State Board of Public Health.

He is widely known in Europe and the United States for his pediatric writings, which include more than two hundred papers in the field of pediatrics and child health.

Physicians Certified by the American Board of Pediatrics.—The following physicians were certified as specialists by the American Board of Pediatrics after examinations held in Seattle on Sept. 10, 11 and 12, 1948:

Forrest Hood Adams, Minneapolis; Mason H. Abramson, Redwood City, Calif.; Wesley Huntington Anderson, Ogden, Utah; Albert T. Aldrich, Beverly

Hills, Calif.; Victor J. Birnberg, Los Angeles; George Orion Boucher, Long Beach, Calif.; Mathew D. Burnett Jr., Houston, Texas; Charles Macfie Campbell Jr., Santa Barbara, Calif.; Michael Joseph Campbell, Chicago; Leroy O. Carlson, Walla Walla, Wash.; R. Wendell Coffelt, Burbank, Calif.; John R. Connell, Denver; Lewis T. Corum, Tampa, Fla.; James Otis Dowrie, Sacramento, Calif.; Josephine Lewis Earlywine, Wilmette, Ill.; Frank L. Fletcher, Boise, Idaho; Thomas V. Geppert, Detroit; Grace Baker Goebel, Corte Madera, Calif.; Margaret L. Goetsch, Glendale, Calif.; Martha Helen Hale, Dallas, Texas; Herbert Bryan Hutt, Youngstown, Ohio; Julius M. Kantor, Kansas City, Mo.; Frank McCarry, Spokane, Wash.; John Patrick McDermott, Seattle; Donald Hemphill McDonald, Abilene, Texas; John Cunningham Montgomery Jr., Bellingham, Wash.; Arthur James Moss, Inglewood, Calif.; Aaron Nisenson, Los Angeles; Leon Oettinger Jr., Los Angeles; Sam M. Powell Jr., Corpus Christi, Texas; A. Martin Puris, Chicago; Edgar Moskedal Rector, Portland, Ore.; Francis H. Redewill Jr., Whittier, Calif.; Clark M. Richardson, Los Angeles; Catherine Foss Roberts, Los Angeles; Samuel M. Rosenthal, Los Angeles; Melvin H. Schwartz, Oakland, Calif.; Albert John Sheldon, Santa Ana, Calif.; Ralph Omer Sherberg, Denver; Frederic E. Simpson, San Angelo, Texas; Pauline George Stitt, Honolulu, Hawaii; Philip Roger Vandeman, Olympia, Wash.; James Sherman Vedder, Marshfield, Wis.; Elsie I. Wisczorowski, Chicago.

Award for Original Research Announced.—The Maurice Lamm Blatt Memorial Fund announces a prize of $250 to be given for a piece of original research work done by an intern or resident of the Cook County Hospital, Chicago, or a former intern or resident who has been away from the hospital not more than five years. All communications should be addressed to the Maurice Lamm Blatt Memorial Fund, Children's Division, Cook County Hospital.

PERSONAL NEWS

Dr. Senn Appointed Sterling Professor of Pediatrics and Psychiatry.—Dr. Milton J. E. Senn has been appointed Sterling Professor of Pediatrics and Psychiatry and director of the Child Study Center at Yale University, New Haven, Conn. It is expected that the Child Study Center will continue in part the Yale Clinic of Child Development, which heretofore has been under the direction of Dr. Arnold Gesell. In addition, through its clinical services for children of all ages the Center will provide research and teaching mediums for students from professional disciplines interested in the growth and development and the behavior and personality of the human organism.

NOTICES

International Congress on Rheumatic Diseases.—The first International Congress on Rheumatic Diseases ever held in the United States will take place at the Waldorf Astoria Hotel in New York city May 30 to June 3, 1949, inclusive. This seventh international congress is sponsored by the International League Against Rheumatism. The host is the American Rheumatism Association, in cooperation with the New York Rheumatism Association.

Obituaries

BERT I. BEVERLY, M.D.

1894-1948

Bert I. Beverly died suddenly Sept. 27, 1948 while at work in his office at Oak Park, Ill.

Dr. Beverly was nationally known as an outstanding pediatric psychiatrist, but to the end of his life he staunchly insisted on being considered primarily a pediatrician. His death marks the passing of a true pioneer. He was among the first to stress that in pediatrics, in which an appreciation of the factors concerned with growth is fundamental, it is essential to include a knowledge of the normal patterns of mental and emotional growth.

He was born June 2, 1894 in Richfield Center, Ohio. His Bachelor and Master of Arts degrees were received from the University of Michigan and his M.D. degree from Rush Medical College, from which he was graduated in 1923. He served an internship at Children's Memorial Hospital, Chicago, and worked two years at the Illinois Institute for Juvenile Research.

Dr. Beverly began his practice in Oak Park, Ill., and continued there until his death. In spite of a large practice, he gave generously of his time and energy to a variety of other important activities in the field of child health. He was an active teacher on the faculty of his alma mater and served on the attending staff of Presbyterian Hospital and Children's Memorial Hospital. For twelve years he was chairman of the committee on mental health of the American Academy of Pediatrics and for several years chairman of the committee for mentally handicapped children of the Commission for Handicapped Children of the State of Illinois. He was a member of the American Pediatric Society.

The contributions of Dr. Beverly to the literature on pediatric psychiatry attracted wide attention. He was the author of two books, "In Defense of Children" and "A Psychology of Growth," as well as several articles in medical periodicals. His last published article, "Mental Aspects of Growth and Health," received an award as the best psychiatric article for the year 1947-1948.

Dr. Beverly was a quiet, modest and thoughtful man, loved by his patients and admired and respected by his students and his colleagues. He was a loyal friend, and those of us who knew him well feel a deep sense of personal loss in his passing. He is survived by his widow, Irene McKay Beverly, to whom he was married in 1916, and by a daughter, Louise Maurine, and a son, Bert I. Jr

A. H. P.

Society Transactions

AMERICAN ACADEMY OF PEDIATRICS

J. I. Durand, M.D., President

National Meeting, Pittsburgh, Feb. 24-27, 1947

ROUND TABLE DISCUSSIONS

III. Rheumatic Fever

Chairman's Address. Dr. Hugh McCulloch, St. Louis.

The American Academy of Pediatrics has been recognized as a pioneer in round table discussions. These discussions have enlivened the annual meetings, and their reports have been widely read.

I saw recently in the museum of the University of South Carolina a round table large enough to seat 12 persons. This table symbolized equal footing and equal rights for each person. While we cannot have a round table large enough for all of us to gather about, I hope that in our discussion this morning the idea symbolized by the round table in the museum of the University of South Carolina may be carried out.

The interest of the members of the academy in rheumatic fever has grown rapidly. The following activities are evidence of this increasing interest. There have been round table discussions on rheumatic fever in the past; the academy participated in the preparation of a booklet on rheumatic fever published by the Metropolitan Life Insurance Company; four round table discussions are scheduled at this meeting, and a luncheon meeting to be attended by 350 members is planned for tomorrow.

The American Academy of Pediatrics is a member of the American Council on Rheumatic Fever. The council has had a rapid growth, and its position is now secure. The observance of National Heart Week is an outgrowth of the council's work. The academy should always maintain an active interest in the council.

The diagnosis of rheumatic fever is a subject worthy of an entire morning's discussion. It is evident that there is need of clarification in the diagnosis of the disease. In the borderline cases accurate diagnosis is not easy. Rheumatic fever should include rheumatic heart disease. There was a tendency in the past to consider cardiac lesions as the only evidence of rheumatic fever. Rheumatic fever and rheumatic heart disease should be considered as one. The time has come to broaden the field of activity in dealing with the condition and its problems. Physicians who are especially interested in rheumatic fever and who are trained in pediatrics and cardiology should hold key positions in any program relative to clarification of diagnosis.

DISCUSSION

Dr. William Weston Jr., Columbia, S. C.: For the past three years there has been a rheumatic fever clinic in Charleston, S. C. In the past eighteen months 20 cases have been reported from the area of Charleston. In the ten years previous to the founding of the clinic only a few cases were reported. If one looks for this condition, it can be found. I am interested in knowing what criteria should be the basis for a diagnosis. I should like to report that under the health program of the

Children's Bureau a clinic will be established in March in Columbia, and later one in either Spartansburg or Greenville.

DR. HUGH MCCULLOCH, St. Louis: Were these 20 cases severe?

DR. STANLEY GIBSON, Chicago: What is the effect of climate on the disease? Is it less common and less severe in the South?

DR. HUGH MCCULLOCH, St. Louis: I was hoping to lead Dr. Weston on. How were these cases discovered?

DR. WILLIAM WESTON JR., Columbia, S. C.: The clinic is composed of a pediatrician, assistant pediatrician, cardiologist and a roentgenologist. Suspected cases are referred to the clinic by the family physician. In the rural territory where there are few pediatricians, few cases were referred to the clinic. Rheumatic fever is not as severe here in the South as it is in the colder climates. It is less permanent and less apt to recur. In the Negroes it is more serious and more permanent and has a greater percentage of cardiac complications. Housing and nutrition are considered important factors.

DR. HUGH MCCULLOCH, St. Louis: Do you consider Dr. T. Duckett Jones's (The Diagnosis of Rheumatic Fever, *J. A. M. A.* **126**:481-486 [Oct. 21] 1944) criteria adequate?

DR. WILLIAM WESTON JR., Columbia, S. C.: Occasionally, in the older cases, nodules are observed; this occurs oftener in the Negro than in the white patients.

DR. STANLEY GIBSON, Chicago: Are the Negroes more susceptible?

DR. WILLIAM WESTON JR., Columbia, S. C.: I think not.

DR. HUGH MCCULLOCH, St. Louis: Dr. Jones divides the manifestations of rheumatic fever into major and minor divisions. The major division includes carditis, arthralgia, chorea, subcutaneous nodules and recurrences. The minor division includes fever, abdominal pain, precordial pain, rashes, epistaxis, pulmonary changes and abnormal laboratory findings.

DR. E. A. LOEB, Fontana, Calif.: Rheumatic fever is different in Lower California than it is in the rest of the United States. There are no clearcut remissions.

DR. MARION G. JOSEPH I, San Francisco: Five years ago whether or not California had rheumatic fever was disputed. A survey showed that there was rheumatic fever. In southern California little case-finding work was done. The Mexican group is very susceptible. There is a greater prevalence of the more readily recognized symptoms in the northern counties. In the southern counties, the incidence of the disease is just as great, but the symptoms are not as clearcut and diagnosis is more difficult.

DR. G. M. WHEATLEY, New York: Did you set up any criteria for diagnosis?

DR. MARION G. JOSEPH I, San Francisco: My associates and I had no definite criteria. We had few trained personnel. The idea was to get the physicians to report criteria. However, we were not 100 per cent successful.

DR. HUGH MCCULLOCH, St. Louis: State your views on effects of climate.

DR. MARION G. JOSEPH I, San Francisco: We noticed that when the seasons change, especially to damp weather, more cases occur. In spring and fall there are more cases than in summer and winter.

DR. STANLEY GIBSON, Chicago: When I was in California I made rounds with Dr. Joseph Brennemann. In his wards there were 13 patients with nodules.

DR. H. H. MITCHELL, Long Island City, N. Y.: Are your reports limited to those cases of cardiac disease?

DR. MARION G. JOSEPH I, San Francisco: No.

DR. G. M. WHEATLEY, New York: Tell us something of the locations of the diagnostic clinics.

DR. MARION G. JOSEPH I, San Francisco: They are located mainly near the larger cities. There are twelve such clinics now functioning, and several more are planned. While varying slightly in conformity with the local setup, the basic pattern as established in California is:

1. Diagnostic clinics are held in local health centers or hospitals. They are staffed by local public health nurses, medical social workers, clerical workers and volunteers and are directed by a local pediatrician or internist who has had some special training in rheumatic fever. The University of California has given a course on rheumatic fever in the past year. Services of the clinic include a complete history taken on forms designed to get the details of rheumatic fever symptoms, a complete physical examination and laboratory work, including sedimentation rate, complete blood count, urinalysis and electrocardiographic and fluoroscopic examinations. As many appointments are given to each patient as are deemed necessary to make a diagnosis.

2. Hospitalization in acute cases is in the pediatric wards of the children's or county hospitals, under supervision of the physicians connected with the rheumatic fever service.

3. Convalescent facilities are sadly lacking. No convalescent homes limited to the care of children with rheumatic fever exist. Space in pediatric convalescent units is available in eight institutions; in other communities, local hospitals are allotting beds for long term care. Less than 100 beds are available.

4. The reporting of cases of rheumatic fever in children is mandatory. Those children not reported to be under a private physician's care are contacted by the public health nurse and are placed under the program. Supervision will be given these children until they are 21 years old.

DR. G. M. WHEATLEY, New York: Are the local physicians cooperative?

DR. MARION G. JOSEPH I, San Francisco: We always get the local medical association's approval of the program first. The patient's reports are sent back to the private physician.

DR. D. D. RUTSTEIN, New York: How are the clinics financed?

DR. MARION G. JOSEPH I, San Francisco: The rheumatic fever program in California is carried on as a portion of the crippled children's services of the bureau of maternal and child health of the California State Department of Public Health. It is supported by a combination of local, state and federal funds. The services of the diagnostic clinic are available to all without regard to financial status. Financing of hospitalization and of convalescent care may come from various sources. As far as possible, it is a local responsibility. Funds in some counties are derived from an appropriation from the fund resulting from the 1/10 mill per dollar assessed tax valuation which each county must set aside for the care of crippled children. In all counties, this fund must be shared with the other forms of care for the crippled so that in only a few of the richest counties is much money available for rheumatic fever care. In some counties additional local funds are requested from public and private agencies. State and federal funds are required to make up the deficit.

DR. HUGH MCCULLOCH, St. Louis: Would you care to comment on the criteria for diagnosis outlined by Dr. Jones?

DR. MARION G. JOSEPH I, San Francisco: The major signs are fairly rare in California. Of these, carditis is the commonest; arthritis is rare; chorea is uncommon. The diagnosis is made on a combination of minor symptoms with the results of the laboratory work.

DR. R. M. OVERSTREET, Eugene, Ore.: I am from Oregon. If I adhere to the major symptoms as a basis for diagnosis, I seldom see rheumatic fever. I have observed that electrocardiographic tracings are of little worth and sedimentation rates of questionable value. I have no trouble in making a diagnosis of carditis. I seldom see nodules or chorea.

DR. WILLIAM WESTON JR., Columbia, S. C.: Would you classify a case of post-scarlatinal carditis as rheumatic fever?

DR. R. M. OVERSTREET, Eugene, Ore.: Yes.

DR. G. M. WHEATLEY, New York: The American Council on Rheumatic Fever is working on diagnostic criteria.

DR. D. D. RUTSTEIN, New York: The council is working on the problem, but no report has been made. There are many questions regarding the diagnosis of rheumatic fever in borderline cases. Even in rheumatic fever centers, such as Boston, all cases are not clearcut. It was revealed in a study of pregnant women with mitral stenosis that 50 per cent or more could remember no symptoms suggestive of rheumatic fever. Many of these women were in the families of physicians. Apparently, the severity of the attacks or the number of attacks is not related to the severity of myocarditis. Another question to be answered is the length of time from the onset of rheumatic fever to autopsy. It is necessary that children be followed over a long period and that repeated examinations be made.

DR. HUGH MCCULLOCH, St. Louis: I have been impressed by Dr. Rutstein's statements. A spot diagnosis is not nearly so correct as one made after working out a case over a horizontal period. In my work in the rural areas of Missouri I have been impressed by the value of reexamination in borderline cases.

DR. IRVING ROSENBAUM JR., Indianapolis: Dr. Weston brought up the question whether heart disease following scarlet fever should be classified as rheumatic fever. From my experience children with scarlet fever and streptococcic sore throat should be watched more carefully for cardiac complications. Does Dr. Weston see carditis following scarlet fever?

DR. WILLIAM WESTON JR., Columbia, S. C.: I see an average number of cases. I also see nephritis following sore throats.

DR. HUGH MCCULLOCH, St. Louis: Dr. Rosenbaum, tell us of your experience in Indiana.

DR. IRVING ROSENBAUM JR., Indianapolis: At present the feeling exists in Indiana that there is little rheumatic fever. The medical school is building up a clinic. Because of distances it is difficult to send patients to the clinic and to follow them properly.

DR. HUGH MCCULLOCH, St. Louis: Can you explain why so few cases are seen in Indiana. Is it due to lack of interest?

DR. IRVING ROSENBAUM JR., Indianapolis: Partly to lack of interest and partly to lack of a diagnostic center.

DR. D. A. WEIR, Mansfield, Ohio: In Ohio in my first years of practice I saw only a few cases, but in recent years I have seen many more, especially the border-

line types. It is my routine to keep the patients in bed until the sedimentation rate is normal. Recently, I saw a case of rheumatic carditis, the first one in ten years. In my experience rheumatic fever is more frequently seen in the middle or upper economic classes than in the poorer class. For some time I have seen chorea. In only 1 case of chorea was there an increase in the sedimentation rate.

DR. R. B. LAWSON, Winston-Salem, N. C.: In the medical school hospital in North Carolina there are many cases of carditis and chorea but relatively few in which there are nodules or which are of the fulminating type. Only 1 patient with nodules has been seen in the past six years. Fifty per cent of the cases of carditis include no history of rheumatic episodes.

DR. R. R. STRUTHERS, Montreal, Canada: I should like to describe the local experience in Montreal. For many years the hospital had an active service for cases of rheumatic fever. For some time the picture has been changing; the cases in which there were nodules gradually disappeared, and the acute cases of arthritis diminished to so few that the service was discontinued. The same experience has been reported in France and England. Is improved nutrition a factor? However, during a recent tour in Europe I observed that the lowered nutritional standards did not increase the incidence of rheumatic fever or carditis.

DR. HUGH MCCULLOCH, St. Louis: We could spend most profitably much more time in discussing the many problems already presented this morning. However, I should like to get your reaction to one other diagnostic field, the school health services. I shall ask Dr. Wheatley to present his views.

DR. G. M. WHEATLEY, New York: In order to improve the management of cases of rheumatic fever, it is necessary to increase the number of diagnostic services and to improve the methods for early recognition of signs indicating a deviation from normal health. The latter, in my opinion, can best be done by the teacher who has the child of school age under her observation for many hours at a time. It is necessary that teachers be trained to observe and to detect the early signs of deviation from normal health in order to pick out early or potential cases of rheumatic fever. These deviations in health should be reported to the school physician. He, in turn, should have at his disposal the services of specialists, such as a cardiologist or a pediatrician trained in cardiology or in the diagnosis of rheumatic fever. The services of a laboratory should also be available so that electrocardiograms, roentgenograms, fluoroscopic examinations and blood studies can be made. In the meeting yesterday with the executive committee of the American Academy of Pediatrics a three point program was introduced to provide suggestions for improving the school medical examination and for improving the daily observation of the children's health, as well as for the introduction of diagnostic services, including laboratory tests and consultations with specialists. The academy's executive committee objected to the third point. The board was of the opinion that the diagnostic activities of such a program should be sponsored and controlled by the medical societies. What do you think of the idea of training teachers in this field?

DR. R. H. KOTTE, Cincinnati: What part do the parents play in this program? Teachers are now underpaid. Will they be interested in taking on an additional problem?

DR. H. H. MITCHELL, Long Island City, N. Y.: I am fearful of having the teachers trained to observe the signs and symptoms of rheumatic fever. It may lead to an unwarranted diagnosis. I believe the better approach is to train and orient teachers to bring to the attention of the physician, before anything is said to the parents, that the child does not appear well or that his behavior has changed. The

physician can then review the case with the mother. It is not enough to send a note home to the parents. It arouses their fears; it puts the private physician in the position of allaying these fears and places doubt on the ability of the school physician. The whole system breaks down. Failure results when a label is put on a condition before a complete examination has been made. A complete examination and then a diagnosis, if possible, should be the procedure.

DR. HUGH MCCULLOCH, St. Louis: The Department of Interior distributed a pamphlet on school health. It is a most popular one. There are only three sentences regarding the heart in it.

DR. LOUIS SPEKTER, Hartford, Conn.: May I comment on the interest and attitude of teachers to pamphlets? Pamphlets were directed to teachers regarding posture. The results were not good. The teachers did not know what to do. Reading matter by itself does not help. In regard to rheumatic fever, diagnostic specialists must be available. The school medical examinations do not carry enough weight with the family physician. A full report should be sent to the family physician. The health officer in charge of school health services in my city often asks for an orthopedist to examine the children.

DR. W. F. BURDICK, Washington, D. C.: It seems to me that the emphasis should be on training for the physician, rather than for the teacher. If a trained pediatric cardiologist or pediatric rheumatologist passed on patients it would prevent labeling of a condition as rheumatic fever wrongly. For example, a patient with a temperature of 99 F., on whom one sedimentation rate and one complete blood count were made, was kept at rest in bed for one year.

DR. R. R. STRUTHERS, Montreal, Canada: I endorse Dr. Burdick's idea. The deficiency is the lack of physicians properly trained to make the diagnosis. I have a field day after each year's school round-up. The approach should be to make the physicians better diagnosticians.

DR. H. H. MITCHELL, Long Island City, N. Y.: I am in agreement with what has been said. Setting up a diagnostic board is a dangerous thing. The members of the board are not apt to take advice from private physicians readily. Furthermore, the setup must be made with the local medical society's approval, and the program should be developed along the lines it wants.

DR. IRVING ROSENBAUM JR., Indianapolis: The school physician is handicapped by his not seeing the family in order to get a complete history.

DR. F. W. LATHROP, Plainfield, N. J.: I have had more success when the history was taken by the school nurse rather than by the school teacher.

DR. H. H. MITCHELL, Long Island City, N. Y.: In New York one of the weaknesses of the rheumatic fever program was the lack of contact with the physicians. Another was the failure of physicians to use the facilities available.

DR. D. D. RUTSTEIN, New York: A case of rheumatic fever should be handled in the same manner as a case of tuberculosis. If rheumatic fever makes its appearance in a family, the entire family should be examined for symptoms and signs relative to rheumatic fever. It should be a reportable disease. A registry of verified cases of rheumatic fever is needed.

DR. MARION G. JOSEPH I, San Francisco: Without a large staff it is impossible to take a complete case history.

DR. HUGH MCCULLOCH, St. Louis: I disagree about the difficulty of study of an entire family. It is not difficult in private practice. The pediatrician should know the status of every member of the household in relation to the many problems

associated with the child who has rheumatic fever. It is essential to know whether the mother has carditis or whether some one in the family has borderline rheumatic fever.

DR. W. F. BURDICK, Washington, D. C.: Is the academy making an effort to train pediatricians in rheumatic fever and its problems?

DR. D. D. RUTSTEIN, New York: The Children's Bureau has the funds for training, but the problem is to get a place, or places, in which to train the necessary personnel. Other types of personnel must be trained also, such as that in public health departments.

DR. A. E. HANSEN, Galveston, Texas: There is no criterion by which to establish a diagnosis of rheumatic fever. The diagnosis can be made only by clinical means; that is, by careful history taking, physical examination and laboratory data. The recognition of this disease depends on the ability and knowledge of the individual physician and his familiarity with the manifestations of rheumatic fever in children. An awareness and knowledge of the disease prompt the making of the diagnosis. There are many conditions which may be confused with rheumatic fever. Among the commoner ones are appendicitis, osteomyelitis, poliomyelitis, subacute bacterial endocarditis, acute sepsis and low grade mild infections. I am of the opinion that the manifestations of the disease I have seen in Minneapolis are about the same as those in Texas.

DR. MANNHEIMER, Stockholm, Sweden: In Sweden, rheumatic fever is more prevalent in Göteborg than in Stockholm. Chorea occurs less frequently in Stockholm and its suburbs at present than it did twenty years ago. I feel that diagnosis should be based on a personal evaluation of the patient, his present symptoms and the results of laboratory work. The occurrence of gallop rhythm in acute primary carditis is as common as the prolongation of the P-R interval.

DR. RUSTIN MCINTOSH, New York: Chorea is less common than it was previously. Polyarthritis is common in a milder form, but the severe form is seen less frequently among children.

QUESTION: Would you diagnose a condition in which the sedimentation rate was normal as rheumatic fever?

DR. RUSTIN MCINTOSH, New York: I would hesitate to make the diagnosis.

DR. HUGH MCCULLOCH, St. Louis: According to the criteria proposed by Dr. T. Duckett Jones, the minimum signs commensurable with the diagnosis of rheumatic fever are: one of the major manifestations, such as carditis, polyarthritis, chorea, subcutaneous nodules often associated with acute nephritis, pneumonitis or rheumatic peritonitis, together with secondary or minor manifestations, such as epistaxis, loss of weight, pallor, fatigue, abdominal pains, tonsillitis and elevated sedimentation rate. These constitute the background of the condition and are most commonly present in the natural history of the disease. In the incipient stage of the disease, the minor manifestations prompt the making of a provisional diagnosis of rheumatic fever. The patient should be carefully observed for a long period in order to detect the development of major manifestations. Only in the presence of one or more of the major manifestations is it possible to make a definite diagnosis of rheumatic fever.

DR. G. M. WHEATLEY, New York: Some physicians may question arthralgia as a sole basis for the diagnosis.

DR. D. D. RUTSTEIN, New York: Arthralgia alone is not diagnostic. Other manifestations are necessary. Even the finding, on pathologic examination, of

Aschoff bodies is not diagnostic but may be confused by lupus erythematosus and periarteritis nodosa.

DR. L. E. RICHDORF, Minneapolis: My associates and I see many patients who, after tonsillitis, are brought in with the complaint of a prolonged, slight elevation in temperature. Many of these patients are candidates for rheumatic fever. Prolonged supervision and observation are necessary for adequate treatment as well as for eventual definite diagnosis.

DR. W. F. MATTHEWS, Montclair, N. J.: What emphasis should be placed on the school in regard to rheumatic fever? The presence of a heart murmur often leads to an erroneous diagnosis of cardiac disease. The school physician should not label a child's condition "heart disease" but rather refer the child to the family physician for examination.

DR. BARNES: For one third of the patients with symptoms of rheumatic fever definite diagnosis cannot be made. They may be labeled "potential rheumatic fever patients" and kept under close observation for a time. To be honest, one must admit that in many cases a definite diagnosis cannot be reached. It is of greatest importance to consider rheumatic fever as a systemic disease rather than as a cardiac disease.

DR. HUGH MCCULLOCH, St. Louis: In the diagnosis of this disease, the physician holds the key position, but agreement as to what constitutes a diagnosis of rheumatic fever is not always easy. The borderline cases are difficult. Many physicians are called on to make what I call a running diagnosis. I once heard Dr. Howard B. Sprague, of Boston, state that the diagnosis of this disease often took a year.

DR. R. O. Y. WARREN, Wilmington, Del.: A common complaint in children is growing pains. Children with this complaint, I believe, fall into a certain group. In general, they are scrawny, tense children. Dr. Helen B. Taussig said that those children who have pain in their sleep, sleep "tense," stretched out, and, if they are turned over while asleep, they frequently relax and their conditions are improved.

DR. J. A. ANDERSON, Salt Lake City: An interesting fact which my associates and I noted in a recent outbreak of poliomyelitis was that the stiffness and pain in early cases often simulated acute rheumatic fever, which is common in Utah.

DR. E. L. PIPER, Pittsburgh: I feel that the term growing pains should be discarded. Infections may cause such trouble—infections of the teeth, for example. There is a tendency to overdiagnose rheumatic fever. For example, children are frequently said to have rheumatic fever on the basis of a faint systolic heart murmur, without other signs of carditis. I recently saw an 11 year old boy put to bed for six months with such a picture, and another put to bed because of sinus arrhythmia.

DR. HUGH MCCULLOCH, St. Louis: In this child you describe, Dr. Piper, were there any other symptoms of the disease?

DR. E. L. PIPER, Pittsburgh: None whatever.

DR. J. A. ANDERSON, Salt Lake City: I feel we must adhere in diagnosis to a group of signs. We cannot make a specific diagnosis, and we must, therefore, make any diagnosis on the basis of a syndrome. Murmurs and increased sedimentation rates as single criteria are not adequate but simply add to a diagnosis.

DR. E. H. SMITH, Ogden, Utah: So-called growing pains come on at night and clear up with application of heat, acetylsalicylic acid and massage, and in the morning the child wakes up feeling fine. However, if a child wakes up in the morning feeling stiff and sore, this sign should be viewed with suspicion.

DR. H. A. TREMAINE, Boise, Idaho: It is strange that, although I am only 450 miles from Salt Lake City, I have seen no cases of rheumatic fever. Many cases appear in which there is pain in a single joint, an elevated sedimentation rate and a low grade fever, but these are not rheumatic fever.

DR. HUGH MCCULLOCH, St. Louis: Dr. Tremaine, what is the incidence in your part of the country?

DR. H. A. TREMAINE, Boise, Idaho: There was not much in the lower part of the state, but the incidence was high at the Naval Base at Farragut.

DR. J. A. ANDERSON, Salt Lake City: Accurate figures on incidence are difficult to obtain. In Salt Lake City in a school population of approximately 30,000, 500 children were reported absent from school with a diagnosis of rheumatic fever. In the charity hospitals with fairly rigid standards, the diagnosis was made for 8.8 per cent of the patients.

DR. E. L. PIPER, Pittsburgh: The high incidence of rheumatic fever and heart disease has been well demonstrated in New York city, where, in the years 1942 to 1945, this disease caused five times as many deaths in children as meningitis, whooping cough, poliomyelitis, measles, diphtheria and scarlet fever combined.

DR. R. O. Y. WARREN, Wilmington, Del.: Is there a variation from year to year in the incidence of the disease? In the Mediterranean Theater, there was a low incidence for two winters, followed by a high incidence in a third winter. The same sequence appears in civilian populations.

DR. G. M. WHEATLEY, New York: It is difficult to get accurate figures. The best one can do is to rely on competent physicians. The incidence of rheumatic heart disease seems to be about 1 per cent, but it varies from place to place. In California, Sampson showed great variation, the incidence being higher in the cooler part of the state. Paul previously observed the same incidence among Indian children. It seems to coincide with the seasonal variation in infections of the respiratory tract, particularly those due to beta hemolytic streptococci.

DR. H. A. TREMAINE, Boise, Idaho: Most contagious diseases, such as measles and chickenpox, spread evenly. When one occurs in Salt Lake City, it also is seen in Boise. Why does rheumatic fever seem to "pocket" in certain places?

DR. G. M. WHEATLEY, New York: The family incidence might account in part for this, indicating that certain groups get the disease more readily than others.

DR. HUGH MCCULLOCH, St. Louis: Dr. Tremaine, do you include streptococcic infections among those spreading in families?

DR. H. A. TREMAINE, Boise, Idaho: Perhaps not so much as chickenpox.

DR. HUGH MCCULLOCH, St. Louis: Platou reported rheumatic fever in New Orleans, but no seasonal incidence occurred there.

DR. KEATING, Kansas City, Mo.: My associates and I have been most interested in rheumatic fever in Kansas City in the schools. Many patients are put to bed needlessly on the basis of murmurs; but I am particularly interested in the subject of a survey. How is one made, and what does one do about the child with rheumatic fever after he has recovered?

DR. J. A. ANDERSON, Salt Lake City: After recovery, one does nothing specific as far as the amount of activity is concerned. In hospitals activity is often easier to judge than at home, especially on the basis of sedimentation rates, but even these are misleading. When a child looks well, we let him out of bed.

DR. HUGH MCCULLOCH, St. Louis: Recovery from an attack can be fairly well assured if the following criteria are used:

1. The child must be free of fever—not over 100 F. rectally when he is quiet. 2. The pulse rate must be 100 or less, or stationary. 3. The child must be at a normal weight and gaining. 4. The child must not be receiving drugs. 5. The child must not have rheumatic symptoms. 6. There should be no infection in the nose and throat. 7. Abnormal cardiac signs must be absent. 8. The sedimentation rate should be normal or stationary, and the white blood cell count should be normal. 9. The appetite and sleeping habits must be normal. 10. The child must be emotionally stable.

DR. EMELIE M. PERKINS, Rutland, Vt.: I should like to ask again about surveys. Physicians vary so much in their diagnoses.

DR. G. M. WHEATLEY, New York: In order to get a good survey, one has to include physicians who know the disease. For example, in one small community in New York state a veritable epidemic of rheumatic fever was reported. However, when a consultant was called in to examine these children, only one child was found to have rheumatic fever.

DR. FRANK VAN SCHOICK, Detroit: In the examinations of men for the armed forces in the state of Michigan alone, 5,000 were rejected because of rheumatic heart disease, as diagnosed by experts. Many were husky men who were unaware of the disease. What was the unrecognized condition in childhood that led to these 5,000 rejections? The attempt to answer this question was the inception of the rheumatic fever program in Michigan. One of its aims is to educate the physicians.

DR. HUGH MCCULLOCH, St. Louis: Will you tell us something of the program?

DR. FRANK VAN SCHOICK, Detroit: Under the auspices of the state medical society, diagnostic centers for rheumatic fever have been set up within the state. Patients are sent in by private physicians for diagnostic study. Reports are sent to the physicians, and later follow-up examinations are requested when needed. Dr. Osterlin can tell you something of the beginning of the program.

DR. M. F. OSTERLIN, Traverse City, Mich.: Dr. Moses Cooperstock, of Marquette, Mich., in a study of cases in seven counties in the upper peninsula, reported more rheumatic fever than in the rest of the state combined. This awoke us to the fact that there was much more rheumatic fever than we had suspected. In addition to diagnosis of the disease, the most important thing we do is helping children out of bed. The program with an adequate follow-up procedure will take five years.

DR. G. M. WHEATLEY, New York: Is your follow-up procedure adequate?

DR. FRANK VAN SCHOICK, Detroit: At present it is not.

DR. M. F. OSTERLIN, Traverse City, Mich.: Educating the physicians is not any easy task.

DR. FRANK VAN SCHOICK, Detroit: These 5,000 cases of rheumatic fever in young adults is a challenge. I think we should be willing to make a diagnosis on minor complaints.

DR. G. M. WHEATLEY, New York: The emphasis should be placed on repeated examination—not on making a definite diagnosis of rheumatic fever for a child in whom the condition is questionable.

DR. HUGH MCCULLOCH, St. Louis: We are now searching for children with rheumatic disease who have been missed—the children with the minor, mild cases.

DR. KEATING, Kansas City, Mo.: In Kansas City we screen the children in the schools for potential rheumatic fever. These children are checked periodically by the family physician or at the cardiac clinics. Rheumatic fever has developed in a number of children in this group.

DR. M. F. OSTERLIN, Traverse City, Mich.: In order to use such a screening procedure one must make a diagnosis of the prerheumatic state. This brings up the question of sulfonamide prophylaxis.

DR. KEATING, Kansas City, Mo.: Those with a definite previous history of rheumatic fever are often given sulfonamide prophylaxis.

DR. FRANK VAN SCHOICK, Detroit: I should prefer to call this prerheumatic state preclinical.

DR. HUGH MCCULLOCH, St. Louis: I prefer to call it subclinical.

DR. J. D. STURGEON JR., Uniontown, Pa.: In private practice do you give these children sulfonamide prophylaxis?

DR. G. M. WHEATLEY, New York: I do not recommend it. Information on the value of such a procedure is inadequate for these questionable, or subclinical, cases. I should reserve the treatment for those children with definite past rheumatic fever. The child who is below par should be watched carefully.

DR. J. A. ANDERSON, Salt Lake City: Since there is a large population in Utah with the same genetic background, possibly the population as a whole is more susceptible than a more heterogenous population. In any case I like to see every child in a family in which 1 case has been found. The child whose score on the Wetzel grid has been slipping should also be watched.

DR. B. B. BREESE, Rochester, N. Y.: There is one group of patients which should be watched carefully for the development of rheumatic fever—those children with streptococcic infections, such as scarlet fever, tonsillitis and cervical adenitis. The experience at Farragut, Idaho, in the Naval Base, where the attack rate of streptococcic disease was tremendous and where the incidence of rheumatic fever was exceedingly high after such infections, bears out this observation. The experience at Great Lakes, Ill., where, in 1944, more than 100 cases of scarlet fever occurred daily during one outbreak, to be followed by rheumatic fever in 10 per cent of the cases, seemed to confirm the fact already shown by Coburn that the Streptococcus was definitely related to the initial attacks and to the recurrences of rheumatic fever. Dr. Jones showed the same situation at Newport, R. I. In fact, the basic approach may have to be against the Streptococcus.

DR. FRANK VAN SCHOICK, Detroit: In private practice we recognize the child who after an infection of the respiratory tract becomes pale and easily fatigued, with an increased white blood cell count and sedimentation rate. He is put to bed and watched.

DR. KEATING, Kansas City, Mo.: Included in the group of prerheumatic children are those with scarlet fever and tonsillitis. The organism is typed and grouped, and then these children are followed.

DR. HUGH MCCULLOCH, St. Louis: Three phases in rheumatic fever have been described: phase 1, the original streptococcic infection; phase 2, the silent phase, and phase 3, the clinical rheumatic fever.

DR. J. A. ANDERSON, Salt Lake City: Streptococcic infection is basic in rheumatic fever, but unfortunately only persons with scarlet fever are isolated, whereas those with tonsillitis, which is just as dangerous, are not. The public health laws should be modified to take this into account.

DR. G. J. LEVY, Memphis: What is the percentage of multiple cases of rheumatic fever in families?

DR. D. D. RUTSTEIN, New York: I cannot answer this question, but May Wilson's book (Rheumatic Fever, New York, Commonwealth Fund, 1940) has the answer.

DR. R. M. KEAGY, Altoona, Pa.: I have been interested in the child who is pale, does not gain weight and is easily fatigued. A child frequently inherits his parents' bad habits, rather than their diseases. If these habits could be corrected, the child would do better.

DR. D. D. RUTSTEIN, New York: In my opinion it is impossible to attack the problem of streptococcic infection directly. The experience at Fort Bragg showed that membranous tonsillitis often was not streptococcic in origin, and clinical diagnosis of streptococcic infection is frequently difficult. Furthermore, mild streptococcic infections may lead to rheumatic fever, and the severity of a streptococcic infection and the incidence of rheumatic fever seem to have no relationship. One would be forced to make cultures for whole school populations repeatedly, not to mention the adult population.

DR. B. B. BREESE, Rochester, N. Y.: It is true that streptococcic infections are not always easy to recognize, but the severer ones usually can be recognized. In general, the severer infections are the more dangerous to other persons.

DR. J. A. ANDERSON, Salt Lake City: When the carrier rate in a population is lowered, an epidemic can be prevented. Even though it seems impossible at present, there is no reason, if the streptococcic problem is basic in rheumatic fever, that we cannot attempt to control it. Many diseases considered impossible to attack in the past are not so considered now.

DR. W. E. VAN ORDER, Chattanooga, Tenn.: What value do tonsillectomy and adenoidectomy have prophylactically in rheumatic fever?

DR. D. D. RUTSTEIN, New York: Kaiser and Wilson both studied the effects of these operations and showed that they had no value.

DR. H. H. LIBERMAN, Moline, Ill.: How may one know when true arthralgia begins? Do simple leg aches and so-called growing pains of children point to rheumatic fever?

DR. G. M. WHEATLEY, New York: While migrating polyarthritis is generally considered the classic feature of rheumatic fever, no symptom offers greater difficulty in the decision as to whether the complaints are on a subjective or objective basis. Some of these symptoms are relieved merely by changing the child's shoes or perhaps by bringing his exercise within the range of individual tolerance. The only thing one can say is that such a case, either with or without fever, calls for continued observation.

DR. BANICE FEINBERG, Providence, R. I.: It has been shown that 80 to 82 per cent of so-called growing pains are not rheumatic in nature, but if such pains follow an attack of scarlet fever or some other infection due to beta hemolytic streptococcus, the possibility of rheumatic infection is increased.

DR. E. W. ADAMS, Great Falls, Mont.: Does the presence of rheumatic pain and fever justify the diagnosis of rheumatic fever?

DR. G. M. WHEATLEY, New York: One should be most hesitant in making the diagnosis of rheumatic fever on arthritic symptoms alone, unless carditis is present.

DR. W. R. YOUNG, Salt Lake City: How may one be certain that carditis is present in a given case, when one realizes that systolic murmurs may be heard in

probably one third of a group of normal children? What diagnostic help is to be expected from roentgenograms of the chest and electrocardiograms?

DR. BANICE FEINBERG, Providence, R. I.: I feel that roentgenographic evidence of cardiac enlargement means little, unless other evidence is present. From a single roentgenogram, it is not safe to conclude that the cardiac shadow is enlarged unless it is decidedly so. One can, however, pay close attention to location of the apical beat. The electrocardiograms may be able to demonstrate a prolonged auriculoventricular conduction time, as well as numerous other changes, but such changes are noticed less frequently in children than in adults.

QUESTION: May the pulse rate be used as an index of cardiac involvement?

DR. G. M. WHEATLEY, New York: Interpretation is difficult because the physician usually sees the child during waking hours at home or in the office, at which times the pulse is apt to be accelerated from excitement or emotional factors. Study of the pulse rate is of little value, unless the parent can be taught to take accurate counts while the child is asleep.

QUESTION: Is anything to be learned from a study of the heart sounds, that is, type of murmur, cardiac rhythm and response to exercise?

DR. G. M. WHEATLEY, New York: Careful analysis of the murmur is important. A long, loud, apical, systolic murmur widely heard and not varying with position may be considered significant. Functional murmurs will disappear on exercise. Any diastatic murmur is, of course, a pathologic change. Also, it has been noted that after vigorous exercise, a damaged heart will show a lag for the first fifteen seconds, corresponding to the prolongation of the auriculoventricular conduction, and then will speed up. In a normal heart, the acceleration is immediate. It is unsafe to make the diagnosis or to check the progress of the case on the murmur alone, for as the valve goes on to the healing stage, the murmur is apt to become louder and sharper.

QUESTION: May the temperature be used as a guide to rheumatic activity? What is the normal body temperature for children?

DR. BANICE FEINBERG, Providence, R. I.: I pay no attention to minor fluctuations in temperature in the absence of other symptoms. The temperature should be taken on rising and again after an adequate rest period. If the swing is slight, it may be ignored. The rise in temperature should be used only as an indication for further investigation.

DR. H. B. ROTHBART, Detroit: Is there not a cardiorespiratory factor to be considered? I mean by this the finding of murmurs which may be made to disappear by having the patient put the head in various positions so as to change the mediastinal pressure on the great vessels.

DR. G. M. WHEATLEY, New York: How much reliance do you place on the sedimentation rate as evidence of the activity of the disease process?

DR. BANICE FEINBERG, Providence, R. I.: If one is willing to accept an increase in sedimentation rate as an index of infectious activity, a conclusion as to what is normal must be reached. It is generally agreed that up to 10 minims (0.6 Gm.) per hour is normal, 10 to 20 minims (0.6 to 1.2 Gm.), moderately increased, and more than 20 minims, abnormal. Additional information is to be obtained if the reading is made at fifteen minute intervals and the occurrence of unusually sharp increases in any single fifteen minute period noted, even though the total for one hour may not be more than 20 minims. An elevated sedimentation rate is merely one manifestation, and, according to the criteria cited by Dr. Jones previously referred to, there should be another minor, as well as one major, mani-

festation before a positive diagnosis is made. The sedimentation rate is a valuable test when used in conjunction with other findings.

QUESTION: Is any help to be obtained from following the blood picture?

DR. G. M. WHEATLEY, New York: Perhaps not in the establishment of the diagnosis, but in a case of proved rheumatic fever, an improving blood picture means that the patient is progressing favorably. Iron and liver therapy seems to be without effect so long as the rheumatic infection is highly active. Improving appetite is another good sign. Fluctuation in pulse rate and temperature seem of relatively less importance as guides of progress. Generally speaking, a physician in the medical evaluation of rheumatic fever is like a good cook. There are no definite tests for turning out a good soup. Clinical evaluation is the important thing.

In some states, definite rheumatic fever programs have been set up with a view toward earlier and more accurate diagnosis. The usual plan is for children with suggestive symptoms to make two visits to the clinic; at the first visit the history is taken and medical data are collected, including physical findings and results of laboratory tests, a roentgenogram and an electrocardiogram. A return visit is made for a digest of the assembled data. The usual conclusion is that about one third of the children do not have rheumatic fever, for another third positive diagnosis may be made and for the final third the diagnosis is uncertain and further medical observation must be given.

DR. BANICE FEINBERG, Providence, R. I.: In my experience, fully three quarters of the children who came to the clinic do not have the disease.

DR. H. T. KNOBLOCH, Bay City, Mich.: Our state medical society has inaugurated a rheumatic fever control program and has established diagnostic centers at strategic points throughout the state. These clinics are manned by a diagnostic team consisting of an internist, pediatrician, roentgenologist and laboratory technician. The suspected child is interviewed by a medical social worker, who takes the history. Fifty per cent of these children do not have rheumatic fever, 35 per cent definitely have it and in about 15 per cent the presence of the disease is questionable. A final report letter is sent to the family physician.

DR. D. E. OVERTON, Newburgh, N. Y.: We have a similar diagnostic setup in our area. Children suspected of having the disease are found by the county nurses and are brought to the clinic.

DR. G. M. WHEATLEY, New York: It might be helpful if teachers in the public schools could be made conscious of rheumatic fever. Through daily contact with the children, they have opportunity to detect signs and symptoms suggestive of below par health and are in a position to call such children to the attention of the parents and the school physicians. I suggest the following indications for bringing children to medical attention: (1) failure to gain weight, (2) pallor, (3) poor appetite, (4) fatigue, (5) frequent colds and sore throats, (6) tonsillectomy and adenoidectomy because it may indicate previous sore throats, (7) scarlet fever or any known streptococcic infection, (8) unexplained nosebleeds, (9) unexplained fever, (10) pains in arms, legs and joints, (11) unusual restlessness, irritability, twitching or jerky motions and (12) history of previous rheumatic fever.

DR. HUGH MCCULLOCH, St. Louis: The awakened interest in rheumatic fever frequently puts the physician on the spot. Parents want a yes or no answer as to whether their child has rheumatic fever. The fact remains, however, that in a fairly large group of cases it is impossible at the time to rule the disease definitely in or out. The only correct approach is to make every effort to bring these

children up to a better health level and then to watch them carefully. Do not stamp a child's condition as rheumatic fever until you know.

Dr. G. C. Sincerbeaux, Auburn, N. Y.: What do you do with a child when you suspect rheumatic fever, particularly if he has some pains in muscles and joints and a slight elevation in temperature. Would you institute rest in bed?

Dr. Hugh McCulloch, St. Louis: No. I do not insist on rest in bed unless I note some condition which could be improved by rest in bed. A child may have a slight cardiac enlargement and murmur and still may not be particularly helped by rest in bed. In some instances the answer is obtained by giving a trial of rest in bed, and, if appetite and general conditions improve under such treatment, it may show one is on the right track.

Dr. H. B. Rothbart, Detroit: Would you let a child suspected of having the disease continue in school and run the risk of contracting infections?

Dr. Hugh McCulloch, St. Louis: Yes, I would.

Dr. H. B. Rothbart, Detroit: That sounds like heresy.

Dr. Hugh McCulloch, St. Louis: I infer, of course, that the child would adhere to adequate rest periods and be kept under close observation. Rheumatic fever is a chronic disease with which the child must learn to live. It is important that the physician not add to the child's difficulties by making him an emotional as well as a cardiac cripple. As I said before, give him a period of rest in bed if you see some factor which can be helped by rest in bed, but not as a treatment routine.

Dr. G. M. Wheatley, New York: In summary then: 1. The pediatrician has an important role in spotting early signs and symptoms. 2. He must hesitate in labeling a child's condition as rheumatic fever until he is certain. 3. Medical observation must be long continued.

IV. Allergy in Childhood

Interpretation and Significance of Cutaneous Tests. Dr. L. W. Hill, Boston.

Cutaneous testing in infants and young children is not a pleasant procedure. Anything which will enable it to be done quickly is a help. Therefore, many physicians are now using liquid glycerinated antigens instead of dry powders. The glycerin is sticky, and if the child moves, the drops do not run together as they do if dry powder and a solution of sodium hydroxide are used. Glycerin is somewhat irritating, and unless extremely small scratches are made little wheals may form at every scratch, making the tests difficult to interpret. If this is borne in mind and proper technic is used, it seems to me that for cutaneous testing in infants and young children the use of glycerinated extracts solves several difficulties.

Too much reliance must not be placed on positive reactions to cutaneous tests. The cutaneous test is simply one diagnostic procedure which often helps in solving problems of clinical allergy, but many positive reactions to these tests are entirely without etiologic significance. This is particularly true of positive reactions to tests with foods in older children. I suppose one reason for such reactions may be that with increasing age the child does not absorb the unsplit food protein. Furthermore, in respiratory allergy the skin may have become sensitized to food protein, perhaps from occasional absorption, while the mucous

membrane of the respiratory tract may have escaped sensitization. The skin is probably the most important immunologic organ of the body, and a positive reaction to a cutaneous test, whether it be to tuberculin trichophytin or any food or environmental allergen, means simply that at some time antigenic material was absorbed and an immunologic cutaneous reaction resulted. There is no guarantee that the positive reaction to a cutaneous test has anything to do with the symptoms for which the patient presents himself. I always have remembered something that Dr. Bret Ratner, of New York, once said, "The organism is being continually bombarded with antigenic material from the environment." Thus, immunologic reactions which are reflected in the skin often result, and the only truly nonallergic person is one who has not lived long enough to be marked by his environment. Nearly everyone in this room, whether he has symptoms or not, would show one or more positive reactions if he were tested intracutaneously with a few foods, a few environmental allergens, tuberculin and trichophytin. He has been exposed to the allergen at some time during his life, and on reexposure he would show altered reactivity. Therefore, in a strict sense, everyone who has lived long enough is allergic, but only comparatively few persons have symptoms.

The intracutaneous test is far more delicate than the scratch test—it is often too delicate, so that many nonsignificant reactions may be obtained. Its use is also not without danger in highly sensitive subjects, and a good rule is not to make intracutaneous tests until scratch tests have first been made and show a negative reaction. If the positive reactions to scratch tests explain the clinical situation, no further testing is necessary; if they do not, the intracutaneous tests should be made with several of the more important allergens. Not infrequently, significant reactions will be missed if the scratch test alone is relied on. It is important in making intracutaneous tests to use only a small amount of the allergen extract, just enough to make a wheal about ⅛ inch (0.3 cm.) in diameter.

I have never been in favor of doing large numbers of cutaneous tests as routine, and I wish to pass around what seems to me an example of foolishness—a record of cutaneous tests made by a would-be allergist of Boston on an unfortunate 5 year old child with asthma. The second example is a list of foods to avoid, as determined by cutaneous tests given by another Bostonian to another asthmatic child 6 years of age. This child was shown to be sensitive to 42 foods, from dill pickles to dates, clams and nutmegs. The real cause of her asthma was birch and ragweed pollen, and she has been successfully treated with these pollens for the last few years and eats whatever she likes.

This method of procedure is not confined to Boston. It is indulged in by some practitioners who know no better and by some who should know better. Such methods have done much to discredit this treatment of allergy. Common sense is more important than cutaneous scratching.

Chobot and Hurwitz (*J. Allergy* **8**:427-436 [July] 1937), in an excellent piece of work, reported that of 198 positive reactions to scratch tests with foods in 38 allergic children only 36 were of clinical importance. Positive reactions to environmental allergens in older children are more likely to be of etiologic significance than positive reactions to tests with foods, although it is by no means uncommon to find definitely positive reactions to pollens in children who have no symptoms during the pollen season. I do not know whether the presence of such reactions is an indication that hay fever will develop later, or whether it is no more likely to develop in a child with such a reaction than in anyone else. It certainly will not, unless the child's nose becomes sensitized as well as his skin.

In adults sensitized to pollens the cutaneous sensitivity is, as a rule, of high degree, and positive reactions will almost always be obtained by the scratch method. This is not so true of children, and there are many children with pollen asthma and hay fever who react positively to tests with the responsible pollen only by the intracutaneous method.

Relatively weak allergens, such as dust and feathers, will often react negatively to scratch tests but positively to intracutaneous tests. Strong allergens, such as cottonseed, egg white, fish and nuts, will usually give positive reactions on scratch tests if sensitization is present. If there is a definite history of violent sensitivity to one of these allergens, it is better to do no tests with it: the history is enough. Testing does no good and may do harm.

The patch test is used for testing in contact dermatitis due to nonprotein substances, such as metals, essential oils and dyes. This type of dermatitis is not so common in infants and children as in adults. In atopic dermatitis, the common "eczema" of early life, scratch or intracutaneous tests are commonly used, but it has been demonstrated by several investigators that reactions to patch tests with "protein" allergens may be obtained often in atopic dermatitis, particularly to tests with environmental allergens, such as silk, feathers and human dander. It is thought by some investigators that the results of scratch and intracutaneous tests have nothing to do with infantile eczema but are merely incidental observations. My own feeling is that they often give valuable information, and I am not ready to discard them.

Diagnosis and Treatment of Asthma. Dr. Louis Tuft, Philadelphia.

The diagnosis of asthma is ordinarily easy—expiratory dyspnea with wheezy respiration. The condition is frequently labeled bronchitis because of the associated cough and possibly because of hesitation of the family physician to call it asthma. Recurrent attacks of either bronchitis or bronchopneumonia should lead to suspicion of allergic asthma. Asthma caused by a foreign body and thymic asthma are rarely difficult to differentiate since physicians are more aware of these types and the public more conscious of the foreign body type.

Specific or etiologic diagnosis is made from the history and from the results of cutaneous tests. The history is important—a feeding difficulty, colic or eczema in infancy is suggestive of food allergy. A family history of allergy also points to a probable allergic factor. Cutaneous tests have already been discussed by Dr. Hill. Food allergens, especially egg, milk, wheat, orange, fish, chocolate or tomato, are more important in infancy and early childhood; inhalant allergens, especially dust, feathers and animal danders, are most important in older children. Tobacco is often important, especially as a nonspecific irritant in allergic children. Pollen and mold sensitivity should be kept in mind when the parents have seasonal symptoms.

Weather and temperature changes, particularly those with the change of seasons, as from summer to fall in September and October or from winter to spring in February and March, are prominent causes of rhinitis and asthma. These conditions are due to atmospheric changes and are seen in whole groups of patients on the same day, and even at the same hour. But they are often confused with the common cold or are attributed to bacterial sensitivity or to sinus infection.

Treatment of asthma, like that of other allergies, consists in elimination or avoidance of offending allergens whenever possible. If this procedure is not possible or must remain incomplete because of allergens such as dust, desensitization is required. Care should be taken to avoid overtreatment or abuses in

treatment. The principle is, as in all medicine, that if one cannot help one should not harm.

Practitioners fall into two groups with respect to treatment of asthma—one group recommends either climatic change (which obviously is an escape and definitely is not curative) or that the child be let alone and he will grow out of it—a sort of treatment by neglect. The second group might be called the enthusiasts. They recognize the allergic basis and proceed to treat it intensively as though it were a condition readily amenable to intensive treatment like diphtheria or syphilitis. Several cases are cited of young children, one 15 months of age, to whom were given concentrated stock dust, stock vaccines, penicillin, sulfonamide drugs and roentgen ray treatment, all within a short time. Each was made worse instead of better. Care is essential in the use of these agents, as young children do not take them well. In most instances, the only injections necessary are the pollen or mold allergens for those subjects with seasonal manifestations, house dust (given well diluted at first) and, in some patients, bacterial vaccines, especially those against sensitizers of the upper respiratory tract.

Diagnosis and Treatment of Pollen Allergy with Special Reference to Dosage. DR. LOUIS TUFT, Philadelphia.

Diagnosis of this condition likewise is readily made from a history of sneezing attacks during the pollen seasons. It must be remembered that in children initial attacks may be of short duration and often are diagnosed as a summer cold. Recurrence of the attacks the following year confirms the suspicion that they were the beginning of true hay fever.

Specific identification of the causative allergen is easily made from the history alone. One should, however, confirm it by cutantous test. This method also helps to indicate how the patient will react to the pollen extract. If the reaction to the test is pronounced, dosage will have to be regulated carefully; whereas, if the reaction is slight, treatment can be given more rapidly and in larger amounts. The scratch test is sufficient in most instances, unless the reaction is negative and the history is positive, then intracutaneous testing can be done. Avoid testing with too many pollen extracts at one time; if many positive signs are obtained, constitutional reactions may occur.

Since it is difficult for most patients to avoid contact with pollen, desensitization is necessary. It is best to start three months before onset of the season and to give one injection a week so that the maximum dose tolerated is reached previous to the season. Then treatment is continued through the season at one-half the dose. Some physicians prefer to discontinue therapy at the onset of the season, but I believe the former method is preferable. The preseasonal form of treatment is best in children. Perennial treatment, which is a continuation of the preseasonal, is slightly better, but it is more adaptable to older children. Age is no barrier to the treatment with pollen; it can begin as soon as the diagnosis is established.

Opinion differs as to the choice of extract. Most physicians prefer to use that of a single grass, such as timothy, to represent all grasses, and that of ragweed, to represent all the weeds in that family. The experience of most observers apparently substantiates the validity of this procedure. It is important to obtain a potent extract, otherwise results may be poor. Likewise, in administering the extract one should be careful not to induce severe local or constitutional reactions. The most usual causes of trouble are the attempts to increase the

dose rapidly, to administer extract at short intervals or to increase the dose too much during the season that pollen is in the air.

The use of diphenhydramine ("benadryl") hydrochloride or tripelennamine ("pyrabenzamine") hydrochloride in addition to treatment with pollen will be provocative of better results in most patients than the use of either one alone.

Allergy to Penicillin and Other Therapeutic Agents. DR. LOUIS TUFT, Philadelphia.

This is an "injection age!" All sorts of material—protein also—are being injected into patients. These agents include penicillin, liver extract, insulin, tissue extracts of various types, vitamins, hormones and, more recently, vaccines prepared from chick embryos. Each of these agents contains a protein or foreign material, which, if injected into the human being, will in certain circumstances produce active allergic sensitization that might possibly lead to unusual reactions. This danger was first discovered half a century ago when it was attempted to inject horse serum antitoxin into patients. Some of them became sensitized, and serum reactions developed. All foreign proteins, including those mentioned previously, possess the same capabilities and can induce sensitization in some patients. All persons can be sensitized. Whether they become sensitized or not will depend on certain factors—the amount injected, the nature of the injected material, the route and the interval between injections. Some persons can be sensitized by extremely minute amounts (e. g., toxin-antitoxin); in other instances large amounts are required (e. g., normal horse serum). Sensitization is more likely, too, from intravenous than from subcutaneous injection. Certain agents are more potent sensitizers; thus, penicillin is more allergenic than milk protein. Finally, if a latent or incubation period is allowed to intervene between injections, sensitization is more likely than if they are given daily. For example, one of my patients received two injections of penicillin within twenty-four hours with only a slight itching reaction a short time later; however, two months afterward when she received another penicillin injection, she had a violent eruption lasting several weeks before recovery. Here the latent period allowed greater sensitization which caused the subsequent reaction.

The reaction to these agents, whether penicillin or one of the others, produces symptoms like those of serum sickness—fever, cutaneous eruption of urticarious nature, joint pains and adenopathy—which usually subside without after-effects, The management is similar; there is no specific treatment, only symptomatic. The histamine-antagonizing agents, diphenhydramine hydrochloride and tripelennamine hydrochloride, are helpful.

Cutaneous tests and antibodies may or may not have positive or demonstrable reactions. If penicillin is to be given to patients with a history of previous reaction, a cutaneous test should be made first, but even though it shows lack of sensitivity, one must still be careful of reaction.

Atopic Dermatitis. DR. L. W. HILL, Boston.

The condition called "infantile eczema" is a conglomeration of dermatoses. Atopic dermatitis is by far the most important member of the group. This dermatosis may last for many years, with remissions and exacerbations, and, although its clinical appearance in the infant is somewhat different from that in the older child and adult, it is the same disease at all ages and should be called by the same name. It is often the first sign of allergy in a predisposed person, who may later have asthma or hay fever.

The first essential in dealing with atopic dermatitis is to make a correct diagnosis, and, while usually this is easy, it must be remembered that by no means all eczematous cutaneous eruptions in infancy fall into this category. If the child is of an allergic family, if there is intense itching, if the eczema began gradually at about the third or fourth month and if positive reactions to cutaneous tests are obtained, particularly to one with egg-white, the diagnosis is assured. Almost all infants with this condition are highly sensitized to egg white, which they have never eaten. Ratner's theory of intrauterine sensitization has always seemed to me sound. The fact that newborn infants do not give positive reactions to cutaneous tests with egg has been used as an argument against intrauterine sensitization. It must be remembered, however, that all young animals form antibodies slowly and poorly. It is not unlikely that, although the infant is sensitized in utero, the antibodies sensitizing the skin do not reach the degree at which they can be demonstrated by cutaneous tests until 10 or 12 weeks of extrauterine life. This is borne out by work of Smyth and Bain, who observed that sometimes infants at the age of 1 or 2 months have a negative reaction to a cutaneous test with egg white which became positive at 3 or 4 months, although they had had no contact with egg in the meantime. Sensitivity to egg white in these infants is, as a rule, of high degree, and the infant can take no egg without violent symptoms. It is so striking a phenomenon that one wonders whether it may have something to do with the development of the dermatitis, even though the infant eats no egg. Woringer, of Strasbourg, expressed the opinion that the fixation of the egg antibody in the cutaneous cells was the cause of the dermatitis. This hypothesis does not seem tenable for many reasons. Moro stated that when once egg sensitivity, which he calls the "primary sensitization," is fixed in the infant it causes the infant to be more easily sensitized to other allergens with which he may come into contact. This theory is the German concept of metallergy, which seems somewhat vague, but I am inclined to think there may be something to it.

Positive reactions to cutaneous tests with other foods that the infant is eating daily may or may not be of importance as a cause of the dermatitis. Sometimes removal from the diet of a food which gives a positive reaction to a cutaneous test is followed by brilliant results; sometimes it does no good whatever. Sensitization to such foods is never violent; if it were, the child could not eat the food. Results of dietetic manipulation are sometimes so negligible that often one wonders whether any of the positive reactions to cutaneous tests with foods have significance. I am sure that sometimes they do, but I should emphasize that the removal of various foods from the diet does not solve the problem of infantile eczema; it is simply one of several tools which may be used. It is never necessary to feed an eczematous infant an inadequate diet because, when various foods are removed, it is easy enough to substitute others. It is not well to remove milk from the diet, unless the eczema is severe, unless one has demonstrated by cutaneous testing with milk that sensitivity exists and unless the infant is in good nutritional condition. No food free from milk is as good a food for infants as milk, although it is often possible when it becomes really necessary to feed an infant quite successfully on a food free from milk over a long period. The use of goat's milk is not often of benefit in the dietetic treatment of infantile eczema because there are so many cross reactions between cow and goat lactalbumin. In the severe form of milk sensitization, which is not common and which is seen mostly in younger infants, when the baby can take no milk whatever without urticaria, vomiting and shock, goat's milk can almost always be taken with impunity. It is not unlikely that the immunologic factor in these

infants is different from that in infants with ordinary infantile eczema who show positive reactions to tests with milk.

Positive reactions to scratch tests with various environmental allergens are obtained in only about 10 per cent of infants with eczema. If intracutaneous tests with feathers and house dust are made, this percentage is considerably raised, but I have never been able to show conclusively that these two allergens were often of etiologic importance.

Dr. Frank Simon, of Louisville, Ky., observed that eczematous infants often give positive reactions to patch tests with human dander. He produced characteristic eczema by rubbing dander into the healthy skin and reported that the infants who show positive reactions to patch tests with this allergen are greatly improved when the mother washes her scalp frequently and wears a turban and a gown when she is near the baby.

The problem of atopic dermatitis in the older child is somewhat different from that in the infant, for foods are of less importance, and environmental allergens become more so. In my experience it is not common to see much benefit from the removal of foods from the diets of children between 4 and 12 years of age, although positive reactions to cutaneous tests may be present. I do not mean to imply that foods are of no importance in this condition in the older children, but rather that they are not so commonly important as in infants. Environmental allergens, such as house dust, feathers, wool and the pollens, are more important and difficult to deal with because they are hard to avoid. Hyposensitization is by no means as successful in atopic dermatitis as it is in respiratory allergy. It often makes the dermatitis worse, and, if it is used at all, only small doses should be given. There is one group of children with atopic dermatitis who are always worse in winter. I feel reasonably sure that contact with wet wool is responsible for the increase in symptoms, and patch tests with wool sometimes show decidedly positive reactions.

When all is said and done, often much relief is brought to some infants with atopic dermatitis by treatment according to immunologic indications; but, unfortunately, many times little practical benefit results. In my hands the use of unsaturated fatty acids has been disappointing, and I have not been impressed with diphenhydramine hydrochloride or tripelennamine hydrochloride, although I have used neither in a large enough series of cases to come to any definite conclusions. The answer has not yet been obtained; the method of treatment is still not good and will not be good, until results can be secured as quickly and as certainly as they are now in pneumonia, epidemic meningitis and diphtheria.

Skilful local treatment is of the utmost importance, and sometimes that is all that can be done. I shall leave this point to subsequent discussion and call your attention now to but two general principles: the use of heavy bandages of elastic material on the arms and legs and the application of coal tar. These two things will sometimes do more for your patient than anything else.

Tripelennamine ("Pyribenzamine") Hydrochloride. DR. NATHAN GORIN, Brookline, Mass.

On the basis of its physiologic effects there is ample reason to suspect histamine as the ultimate active agent in anaphylactic and allergic reactions. The theory that this substance is released from normal cells after injury by trauma, or by a specific antigen-antibody reaction taking place in the cell surface, is not unreasonable.

A systematic search for an antihistaminic drug in the Fourneau series of compounds was started by Bovet and Staub at the Pasteur Institute and further

investigated by Halpern. From this series a somewhat similar group of compounds has been investigated in this country. The present study involved the use of tripelennamine hydrochloride as developed by Mayer, Huttner and Scholz in the Ciba Pharmaceutical Laboratories, Summit, N. J.

In this study my associates and I selected those children from the allergy clinic of the Children's Hospital, Boston, who had had hay fever for no less than three years and in whom treatment by desensitization had not been effective. These children also presented symptoms of asthma at irregular and indeterminate intervals throughout the years, and their symptoms were worse during either the grass or the ragweed season. From this group of 38 who were selected for final study, 6 were decidedly and definitely improved, 7 were moderately improved and 12 were not helped.

In any chronic disease which exhibits exacerbations and remissions, it is usually difficult to evaluate properly the efficacy of any treatment. Obviously, in this age group and in the light of present knowledge we had neither scientific nor adequate control. There were, however, certain rules which could be followed in this program. Treatment by desensitization was discontinued in those children receiving perennial treatment and was not started in those receiving preseasonal treatment. Having no preconceived ideas of its value, we approached the matter objectively. We explained to the mother that we had a medicine, the value of which we knew little, and pointed out the possible side effects of its administration. In this project we had good cooperation from the mothers. If a patient exhibited striking relief, we stopped the administration of the drug temporarily; in these patients the symptoms promptly returned. In the other 20 patients we did not secure such dramatic results; however, in each of these instances the mother preferred to continue, rather than to stop, treatment.

The average child received 25 mg. three times a day. In our group extreme drowsiness was not a serious effect; only 1 patient exhibited it and required discontinuance of the medicine. As our experience progressed, we were able to increase the dose to 100 and even to 125 mg. per day. We were not impressed by any unduly deleterious effects of the drug.

Tripelennamine hydrochloride and associated drugs are a means by which certain symptoms of nasal congestion, rhinorrhea and incidental asthma associated with hay fever can be ameliorated. The mode of action of the drug is still undetermined. The exact site at which the drug produces the antihistaminic effect is still not known. The effect of this drug, related as it is to histamine, may not be exclusively antihistaminic. Certainly its atropine-like effect (antiacetylcholine) must be considered. Little is known of its toxic action or its possible cumulative effect. For the time being, the accepted method of treatment of allergy, the removal of the offending factors and hyposensitization, is still the therapy of choice.

We have presented a conservative approach to the evaluation of a certain drug in the treatment of allergy. All too often newer methods have been hailed with overenthusiasm and then quickly rejected with equal fervor. These antihistaminic agents offer a certain and distinct addition to the means of treating allergy. What their place shall be further study will tell. The more hopeful thought is that their use focuses attention on the treatment of the allergic person as a person and on the mechanism of the particular cause of his allergy, rather than on attempts to decrease his sensitivity.

The Common Infectious Cold and Asthma. DR. L. W. HILL, Boston.

In children the relationship between the common cold and asthma is a problem of the utmost importance and by no means well understood. My remarks are meant to stimulate discussion rather than to present any new or conclusive ideas.

Undeniably, at times it is not easy to distinguish between an infectious and an allergic rhinitis, and many children who are thought to have "colds," particularly in the summer, in reality have pollinosis. Furthermore, in the winter as well acute or chronic rhinitis entirely of allergic origin, followed by or accompanied with asthma, may occur. I am concerned in this discussion only with asthma as a sequence of a definite infectious cold, which is proved to be infectious because it was caught from someone with a cold with whom the child has been in contact. This, and exposure to pollen, are, in my opinion, the two commonest causes of asthmatic attacks in children.

As a rule, when the nonallergic child has a cold, he has no asthma with it; as a rule, when the allergic child has a cold, he does have asthma with it. Furthermore, it has seemed to me that the allergic child is more susceptible to infectious colds than is the normal child. Not uncommonly asthma follows an infectious cold in children in whom no evidences of allergy can be detected.

The infectious cold is then one of the many agents which can activate the mechanism of an attack of asthma. There is no agreement, however, as to its mode of operation, nor any satisfactory theory to explain it. One commonly accepted explanation is that the inflammatory reaction of the respiratory tract, caused either by the virus of the initial infection or by the secondary bacterial invader, makes the bronchial mucous membrane reactive to an allergen, such as dust, feathers, or even a food, to which it is not reactive in the absence of the cold, so that the actual asthma is brought about by this specific immunologic contact. This explanation seems reasonable to me, but there is little actual evidence to support it. It may or may not be true.

Another explanation is that the reaction is entirely nonspecific and that anything which irritates the upper respiratory tract may produce asthma. I like the second explanation somewhat better than the first. Asthma is not produced exclusively by specific antigen-antibody reactions. The allergic child with asthma may have attacks from train smoke, from chalk dust in school, from sudden changes in temperature or moisture content of the air, from overexertion, from the drinking of iced liquids and certainly from overexcitement. The conditioned reflex is there, probably produced in the beginning by specific immunologic factors, but becoming finally less specific and capable of release by many agents entirely unrelated to the original sensitization. The longer the asthmatic condition has lasted, the more likely is this observation to be true.

It is generally stated that the common cold is caused by a virus. In these asthmatic children is there allergic sensitivity to the virus? Nobody knows. Much attention has been given to bacterial sensitivity in asthma. In the opinion of some investigators bacterial sensitivity is common, particularly in adults, who may have chronic bronchitis with their asthma; other investigators doubt its existence. There is not enough evidence in children, at any rate, to indicate that specific bacterial sensitivity is of great importance.

Granted that the infectious cold has much to do with causing asthmatic attacks in children, what can be done about it? There is no evidence that any vitamin, or ultraviolet radiation, will prevent colds. The state of nutrition of the child seems to have nothing to do with it—as many fat as thin asthmatic children have colds. There is no evidence that removal of tonsils and adenoids will prevent colds. The indications for their removal in the asthmatic child are the same as for any child. The sinuses of most asthmatic children will show thickening of the mucous membrane and possibly some retained secretion which is a result of the allergic process,

rather than a cause of the asthma. I doubt if this retained secretion predisposes to colds. Purulent sinusitis is uncommon.

The therapeutic possibilities are not impressive. It is a common practice to use mixed respiratory vaccine, sometimes the autogenous type, more commonly a stock vaccine, in the children who have repeated attacks of asthma following colds in the winter. Some allergists are enthusiastic concerning this therapy; some are lukewarm; some are frankly pessimistic. My colleagues and I use vaccines to a considerable extent in our clinic—I do in my private practice. Administration of bacterial vaccines is almost all that can be done for some of these patients. From my experience this procedure is sometimes worth while. When it has good results, it may work in one of two ways—either the child does not have so many colds, or, perhaps more commonly, he does have colds, but they are not so frequently followed by asthma. I can present no statistical data; this is simply an impression. If vaccine does benefit the patients, it is not easy to determine why it is beneficial. Why should inoculation with a bacterial vaccine produce immunity to a virus? If one assumes that the secondary bacterial infection which accompanies the cold is responsible for the asthma, any beneficial results might be interpreted as due to an increased immunity to the bacteria. This interpretation may or may not be true. More likely, whatever benefit follows the use of the vaccine is nonspecific because of the injection of foreign protein, and I suspect that the same results might be obtained with whooping cough or typhoid vaccine, or indeed with almost any vaccine.

It has also been my impression that some children treated perennially for summer asthma with various pollens, but not with vaccine, have fewer colds in the winter and less asthma than before the treatment was started. This, again, is simply an impression, and the observation may not be correct. I think it is worth while to give these children "tedral" (an antiasthmatic tablet containing ephedrine, phenobarbital and theophylline) or "amordrine" tablets (a tablet containing ephedrine, aminophylline and phenobarbital) the minute a cold starts. One should not wait until the child begins to wheeze. Sometimes an attack of asthma may be prevented in this way.

As you can readily see my ideas on this subject are somewhat incoherent, my ignorance is profound and I have said nothing that you do not know already, so I hope a lively discussion will follow. I am, however, convinced of one thing, that the ordinary infectious cold and pollinosis are the two commonest causes of asthmatic attacks in children, and that, if they were eliminated, the treatment of asthma would be a relatively simple problem. The number of cases in which the primary cause is the cat, a feather pillow, a kapok mattress or a food is small indeed when compared with the many in which the most important cause is either an infectious cold or pollinosis, or often, unfortunately, a combination of both.

Leiner's Disease, Atopic Erythroderma, Urticaria Papulosa and Nummular Eczema. Dr. L. W. Hill, Boston.

These four dermatoses are to be discussed because, while one of them is of allergic origin, little benefit is received from allergic treatment, and because, although the other three are not of allergic origin, they are often treated as if they were.

Leiner's disease, or erythroderma desquamativum, as it is sometimes called, is common in Europe but not in America. It begins, as a rule, during the first or second month of life, earlier than atopic dermatitis. It is commoner in breast-fed than in bottle-fed babies. It may start as an intertrigo spreading rapidly until the

whole cutaneous surface is bright red. There is no vesiculation, but scaling is the most prominent feature. The scales may be fine and dry or coarse and greasy. There is usually associated a decided "cradle cap." Itching is not severe. The blood does not contain allergic antibodies; no eosinophilia occurs, and when the condition clears, as it usually does in two or three months, the skin returns to normal. Diarrhea is common; the nutrition may become poor, and the serum protein level may be low so that episodes of edema occur. The cause is entirely unknown. There is no specific treatment, but a diet with a relatively low fat and sugar and a high protein content, such as can be obtained with protein milk, seems to be of value. The application of a salve containing 5 to 10 grains (0.3 to 0.6 Gm.) of salicylic acid to the ounce (28.35 Gm.) of "vaseline" (petrolatum U. S. P.) is the best local treatment.

When I first encountered the condition which I call "atopic erythroderma," I thought it was similar to Leiner's disease, but after a while I saw plainly that it was not. Atopic erythroderma has the same background as ordinary atopic dermatitis, but for some unknown reason the most prominent cutaneous manifestations are those of general erythroderma and scaling, rather than the usual papulation and vesiculation, although in most cases there is some vesiculation. The erythroderma and scaling may be almost indistinguishable from that of Leiner's disease. The hands and feet are blue and cold, indicating capillary stasis; general glandular enlargement occurs, with high eosinophilia, and reagins to egg white and various other allergens are always demonstrable in the blood serum. The itching is tremendous. The erythroderma usually clears spontaneously during the first half of the second year and is often followed by chronic localized eczema, hay fever or asthma.

Infants with this condition are susceptible to infection, particularly chronic interstitial pneumonia, otitis media, furunculosis and pyelitis. These infections often are accompanied with diarrhea, so that the nutrition may eventually become poor, and the child may die. Autopsy shows nothing remarkable. Removal of allergens to which these infants are sensitized rarely does any good. It is probably best to withhold any food containing wheat and egg, since no detriment to the child will result, but the chance of any benefit from a milk-free diet is too slight to warrant its use, as diarrhea or failure to gain weight may result. The paramount objective in dealing with these infants is to keep them alive and in a good state of nutrition until the process causing the erythroderma, whatever that may be, shall have spent itself. These infants are seriously ill with a profound systemic disorder. It is better not to hospitalize them. I know of no effective treatment.

Urticaria papulosa, or lichen urticatus as it sometimes is called, is a fairly common condition and a troublesome one to treat. It usually begins during the first year of life, rarely after the fourth. It is seen oftenest in the summer on the extensor surfaces of the arms particularly, but it may occur at any time of year, or on any part of the body. The individual lesion consists of an erythematous macula surmounted by a small, hard, shotty-feeling papule. The erythematous base soon disappears and leaves the papule, which becomes crusted from scratching. I mention this disorder because it is often treated as though it were of allergic origin, with cutaneous tests and elimination diets. The truth is that nothing whatever is known of its cause, and there is no systemic treatment of value.

There are several excellent studies on this condition in the literature. Walzer and Grolnick (*J. Allergy* **5**:240-256 [March] 1934) did cutaneous tests on an extensive series and concluded that cutaneous testing was of no diagnostic or therapeutic value.

Corson (*Arch. Pediat.* **48**:349-358 [June] 1931) investigated thoroughly 31 cases and gave the results of cutaneous tests, blood chemical studies, stool examinations and the use of various diets, but could get no clue whatever as to its cause. Tate (*Arch. Dis. Childhood* **10**:22-48 [Feb.] 1935) reported on 270 cases. There was associated allergic disease in only 1.5 per cent, and an allergic family history in only 13.9 per cent. He observed that hospitalization always brought relief and concluded that the exciting agent is something in the patient's home environment, but its precise nature is obscure.

Local treatment is of some value. Painting each lesion as soon as it appears with undiluted crude coal tar relieves the itching and promotes absorption of the papule.

Nummular eczema is often mistaken for atopic dermatitis and treated as such. It consists of sharply defined, circular or oval patches usually dark purplish red, from the size of a dime to that of a silver dollar, occurring especially on the extensor surfaces of the arms and legs. It may appear on any part of the body, including the face. The small patches are more likely to be circular than the large ones. The individual patch is composed of many small vesicles; the older patches are always thick, boggy and slightly moist. The lesions sometimes clear in the center but not as much as ringworm does. Patches of nummular eczema are more regular in outline than those of atopic dermatitis; there is a sharper margin between the diseased and the healthy skin. The larger patches are more boggy and exudative, and there is no lichenification. Itching is moderate. The remainder of the skin, except for the few or numerous patches, is smooth and of good quality. Nummular eczema has no connection with allergy.

Local treatment with crude coal tar, if persisted in, is fairly effective.

DISCUSSION

DR. L. W. HILL, Boston: Allergy can be a racket. Cutaneous testing is often much overdone. Interpretation requires judgment. Occasionally in a child symptoms of hay fever may occur before cutaneous tests show a positive reaction.

DR. FRANK E. ROTH, Hartford, Conn.: Do you recommend doing group cutaneous tests?

DR. L. W. HILL, Boston: No.

DR. LOUIS TUFT, Philadelphia: When used in that way the individual extracts are diluted too much and the common antigen factor is confusing. Most allergists have discontinued group testing. Cutaneous tests may be satisfactorily done by a laboratory technician but should be interpreted by a physician. Many positive reactions to tests mean nothing. Antigenic relationship in various protein families, such as fish, require consideration.

DR. FRANK E. ROTH, Hartford, Conn.: Would you do tests with foods on a child over 8 years of age?

DR. L. W. HILL, Boston: Yes. You may pick up something important, although foods are not one-twentieth so important in older children as environmental allergens.

DR. NATHAN GORIN, Brookline, Mass.: What about the common antigenicity of lactalbumin in different milks?

DR. L. W. HILL, Boston: Casein is the same in all milks, but lactalbumin may be antigenically different. When lactalbumin from cow's milk is at fault, goat's milk may or may not help. It is worth trying.

DR. R. E. JENNINGS, East Orange, N. J.: How do you differentiate bronchiolitis with asthmatic wheezing from true asthma?

DR. LOUIS TUFT, Philadelphia: They are not easy to differentiate. If episodes recur, suspect allergy. Infection in the bronchial tree with a spasmodic tendency will later lead to true asthma. Asthmatic attacks are frequently called bronchitis. Asthma with retained secretions is often called pneumonia. Pneumonia does not clear up as quickly as do these attacks when the obstruction is relieved. Remember that in young children foods important as allergens are malt in "dextri-maltose," fish and fish oils, chocolate and tomato. Inhalants may produce eczema as well as respiratory symptoms. Tobacco smoke, probably a nonspecific irritant, should be eliminated from the house if there is a reasonable possibility that it may be a factor. Asthmatic attacks may be caused by physical allergy, such as a cold wind or sudden atmospheric changes. Weather plays a definite role.

DR. PAUL R. MEYER, Port Arthur, Texas: What is the youngest age at which true asthma occurs, and may not the child desensitize himself?

DR. LOUIS TUFT, Philadelphia: No age is too young. I have seen it at 2 weeks. It is not well to wait years to see whether he will outgrow it. He may, but he may also substitute a new allergy for the old.

DR. J. N. LANDE, Sioux City, Iowa: Infants of allergic parents will have colic. In 80 per cent of babies with colic there is a history of allergy in the family. Does an attack of asthma occur with exposure to cold, i. e., eating something cold or taking a cold shower?

DR. LOUIS TUFT, Philadelphia: Yes. That condition is known as physical allergy. It may also follow change of temperature, such as going out of a warm house into the cold air. Sudden cooling does that.

DR. ARTHUR P. KELLER, McKeesport, Pa.: How frequently do you see infectious asthma in children under 3 years of age?

DR. LOUIS TUFT, Philadelphia: That is a "scrap heap" diagnosis, but it probably exists. Infection causes elaboration of toxins, affecting sensitized tissue in the bronchi, producing asthma. The diagnosis is, however, made too often. Cutaneous tests with bacteria are valueless. Injections with specific organisms must produce asthma to prove it. Climatic asthma caused by changes of season and variations in humidity is often erroneously called infectious asthma. Infectious asthma is infrequent, especially in children under 3 years of age, and is not frequent in children of other ages.

DR. J. R. SCHRODER, Janesville, Wis.: At what age should treatment be started?

DR. LOUIS TUFT, Philadelphia: The earlier treatment is started the better.

DR. J. H. GARTHE, Rockford, Ill.: What is the incidence of anorexia in allergic rhinitis?

DR. LOUIS TUFT, Philadelphia: Anorexia is common. It may also lead to difficulty in speaking, due to the obstruction of the nasal tract.

DR. HENRY BURKHARDT, Cleveland: Is asthma worse after tonsillectomy and adenoidectomy in allergic children?

DR. LOUIS TUFT, Philadelphia: Yes. Hay fever also is precipitated by tonsillectomy and adenoidectomy.

DR. A. R. SCHWARTZ, Pittsburgh: What is the minimum age for cutaneous testing?

DR. LOUIS TUFT, Philadelphia: As young as 3 to 4 months. In fact, there is no age limit. It is important to use satisfactory controls. I use intracutaneous testing exclusively.

DR. FRANK E. ROTH, Hartford, Conn.: What about the intervals, dosage and duration of treatment in hay fever?

DR. LOUIS TUFT, Philadelphia: Start treatment about three months before the symptoms are expected. Weekly preseasonal doses are wise, with increases to the dose tolerated without a general reaction, an amount which varies greatly in different persons. With relief, lengthen the intervals to two, three or four weeks. Continue treatment during the season but reduce the dose. Heavy doses at this time aggravate the symptoms. Stop treatment after two seasons without symptoms. Use a good extract prepared by a reliable house, even though the cost may be greater than that of others.

DR. F. W. LATHROP, Plainfield, N. J.: Do you advise minute doses intracutaneously, particularly of dust extract?

DR. LOUIS TUFT, Philadelphia: It is quite all right. I use pollen antigen in this manner in coseasonal treatment.

DR. G. W. ESTY, Westfield, N. J.: Is the psychogenic factor worth considering?

DR. LOUIS TUFT, Philadelphia: I am not much impressed, but it does occur. Often it is used by the patient to get what he wants. The fear factor needs consideration in psychogenic asthma and can be relieved even by a sterile water hypodermic injection. It can be a tremendous factor, but it is not basic.

DR. J. L. SHORT, Lakeland, Fla.: If the psychogenic factor is not important, why does the temperature drop so soon after the attack is over in an emotional episode with bronchopneumonic symptoms?

DR. LOUIS TUFT, Philadelphia: That could be caused by the release of retained secretion when the bronchi are unplugged.

DR. H. J. DORF, Baltimore: An 8 year old child had had infantile eczema which cleared up at 2½ years of age. When she was 7, nasal sneezing and stuffiness developed only when she entered her own room. Every form of elimination was of no avail.

DR. L. W. HILL, Boston: Change her room. There are fewer children with hay fever and more with asthma—the ratio is about 1:2. This proportion is the reverse of that in adults.

DR. JEROME GLASER, Rochester, N. Y.: National origin of patients must be considered. I have never seen an Italian person with hay fever who did not also have asthma.

DR. H. L. DAVIS, Trenton, N. J.: How stable are the glycerin extract test materials?

DR. LOUIS TUFT, Philadelphia: Very stable. They keep for months, years.

DR. L. W. HILL, Boston: The objection to glycerinated extracts is that with large scratches they cause nonspecific reactions. With small scratches these do not occur.

DR. W. E. KEITER, Kinston, N. C.: Do you use passive transfer for children?

DR. L. W. HILL, Boston: It is not practical, except for experimental work.

DR. J. N. LANDE, Sioux City, Iowa: How long is the scratch in cutaneous testing?

DR. L. W. HILL, Boston: About ⅛ inch (0.3 cm.).

DR. BRET RATNER, New York: Intracutaneous testing with a dilution of 1:100 should be done when weaker dilutions give negative reactions.

DR. LOUIS TUFT, Philadelphia: A slight cutaneous reaction is significant. It is not necessary to have a strong reaction. Cutaneous tests often are not properly interpreted and have, therefore, fallen into disrepute. The skin is similar to a piece of paper on which something is written. The immunologic answer is often meaningless. It proves only contact. Interpret the results in the light of symptoms. Institute a three week trial period of elimination of the food from the diet and watch the results. Then add to diet and observe.

DR. L. W. HILL, Boston: Everyone is allergic, if he lives long enough, as a result of continuous bombardment by an allergenic environment.

DR. H. H. LIBERMAN, Moline, Ill.: Elaborate on the mechanism of obtaining a positive reaction to a cutaneous test.

DR. LOUIS TUFT, Philadelphia: Children are sensitized by proteins. The proteins stimulate the formation of antibodies which result in sensitization. This sensitization is not always permanent. If it is permanent, allergic reaction to the protein takes place.

DR. R. E. JENNINGS, East Orange, N. J.: In the Air Force, cutaneous tests for food allergens were not considered reliable. Elimination diets were used. In infants, the history is much more reliable and cutaneous tests may be limited.

DR. H. L. DAVIS, Trenton, N. J.: Would you eliminate pets if the cutaneous reactions were slightly positive?

DR. LOUIS TUFT, Philadelphia: No.

DR. H. L. DAVIS, Trenton, N. J.: Colds are frequent in children and their causation apparently variable. What can be done, especially as to diagnosis?

DR. LOUIS TUFT, Philadelphia: That depends on the type. One should take into consideration blockage of alternate nasal passages, thin secretion which clears quickly, eosinophilia, the appearance of turbinates, seasonal "pinkeye," fall colds and the history. Children with hay fever seem to have more asthma during the other seasons than do adults. In testing, I always use single antigens and, if necessary, do intracutaneous tests. The size and appearance of the wheal helps decide the dosage in treatment. Do not do too many tests at one time.

DR. J. R. SCHRODER, Janesville, Wis.: Hay fever responds better than asthma to treatment.

DR. E. S. PLATOU, Minneapolis: What is your opinion of Coca's mixed pollens in treatment? In pollen asthma due to many pollens, do you immunize to each separately?

DR. LOUIS TUFT, Philadelphia: The preparation is similar to other pollen extracts. It is not common to have multiple pollen sensitizations. It is permissible to combine the ragweeds with the molds, but one should not add the others, such as cottonseed, kapok and dog's hair, merely on the basis of cutaneous reaction.

DR. L. W. HILL, Boston: Pollens should not be mixed if symptoms are at different seasons.

DR. J. A. ASKIN, Baltimore: What do you do about the child who goes to a camp during the summer and then returns before the close of the pollen season?

DR. LOUIS TUFT, Philadelphia: This practice is bad. Even though treatment has been maintained while in the lesser pollen area, the child usually has a sharp aggravation of symptoms when he returns to a heavily pollinated area. I always advise that patients not be sent away to the mountains during the season unless they stay away all the rest of the season.

DR. J. L. SHORT, Lakeside, Fla.: Is there a common antigen in tree pollens?

DR. LOUIS TUFT, Philadelphia: I do tests with individual tree antigens and treat the ones producing positive reactions individually.

DR. L. W. HILL, Boston: I believe the antigens of tree pollens are similar, and I treat most of the tree-sensitive patients with birch pollen alone with good results.

DR. LOUIS TUFT, Philadelphia: I do not agree. This hyposensitization is probably a nonspecific one.

DR. ERNEST FRESHMAN, Oneida, N. Y.: I use maple, Dr. Hill, as you use birch, for all tree sensitivity and with good results.

DR. S. M. WERSHOF, New York: Perennially treated patients occasionally lose their tolerance to the usual dosage. Why?

DR. LOUIS TUFT, Philadelphia: This fact is an interesting one. I cannot say why it happens. When it does happen one should stop treatment and restart later with a small dose.

DR. D. A. WEIR, Mansfield, Ohio: How do you feel about the progress that has been made in treating eczema?

DR. L. W. HILL, Boston: Much progress has been made in both diagnosis and treatment, but there are still many unknown factors. Many are cured or their condition is brought under control, but with many others there is, as yet, little accomplished.

DR. F. LEE BIVINGS, Atlanta, Ga.: Do you think bacteria may be a possible cause of erythroderma desquamativum (Leiner's disease)?

DR. L. W. HILL, Boston: Possibly so. As indicated previously, this disease occurs mostly in Europe and is uncommon here. There is no good treatment. A diet low in fat and sugar and high in protein works best. Remember that this is not an allergic disease. When a child gets well, he stays well with no later allergic manifestations. Leiner's disease is to be sharply distinguished from atopic erythroderma in which the infant is highly allergic. In this disease cutaneous tests usually have strongly positive reactions to egg and other allergens, but removal of the reactive substances gives little relief. The child should be fed as any other infant and given local treatment. In some of these cases one gets good results with local antiseptics. Not all cutaneous infections look like cutaneous infections, and a considerable number of those with so-called eczema may be chiefly infectious. When in doubt, try local antiseptics. I like to use 3 per cent ammoniated mercury and rarely use sulfonamide compounds locally.

DR. ERNEST FRESHMAN, Oneida, N. Y.: I just had a patient with atopic erythroderma with eosinophilia as high as 35 per cent. Diphenhydramine hydrochloride reduced the eosinophilia.

DR. L. W. HILL, Boston: The eosinophilia may vary from day to day.

DR. ERNEST FRESHMAN, Oneida, N. Y.: Diphenhydramine hydrochloride at least helps patients rest better at night.

DR. L. W. HILL, Boston: They show improvement in the end anyway, but they have other allergies later.

DR. F. LEE BIVINGS, Atlanta, Ga.: Do you approve of penicillin in these cases?

DR. L. W. HILL, Boston: If the patients have other infections, it is of value.

DR. F. LEE BIVINGS, Atlanta, Ga.: Is the perigenital area involved?

DR. L. W. HILL, Boston: It is most interesting that the diaper area in some infants with generalized eczema may be entirely free. It might be well to try urine compresses over the other areas.

DR. DOROTHY M. LANG, White Plains, N. Y.: How important is dermatitis from baby oils?

DR. L. W. HILL, Boston: They cause occasional trouble, especially the medicated oils, but this is a contact dermatitis like poison ivy and different from atopic dermatitis.

DR. LOUIS TUFT, Philadelphia: Inhalant antigens as a cause of atopic dermatitis are much neglected. Feathers, wool and dust cause skin trouble not only by contact but by inhalation. This is also true with pollens and eczema. Treat as for hay fever or asthma with antigen hyposensitization. When house dust is involved, make an extract of the dust and treat the patient with it. Do not forget that allergens get to the blood, as well as the gastrointestinal tract, by inhalation or by contact. Molds probably are more important than we think. Not enough is being done about the problem.

DR. M. T. BRIGGS, Lynn, Mass.: What is the importance of fungous infections of the skin?

DR. L. W. HILL, Boston: Fungi of the trichophyton group are unusual in infants. In babies with fungous infection of the skin it is more likely to be yeast. I did oidiomycin and trichophyton testing on a series of infants and young children. Many showed positive reactions to oidiomycin and very few to trichophyton. The older one gets the more frequent are the positive reactions—similar to the increase in positive reactions to tuberculin with age. In fungous infections there are slightly raised, sheetlike areas which differ from the punctate appearance of eczema. Mycology is a tremendously complicated subject. Smears are not very satisfactory. Depend more on the clinical appearance; a positive reaction to an oidiomycin test in a very young child when it ordinarily should be negative has value.

DR. G. W. ESTY, Westfield, N. J.: The extent of egg sensitivity is remarkable.

DR. LOUIS TUFT, Philadelphia: Yes, even cooking odors of egg or fish may cause eczema or asthma.

DR. W. L. SCHAEFER, Wichita, Kan.: Is there a relation between allergy and myositis or vague pains not rheumatic?

DR. LOUIS TUFT, Philadelphia: The answer would be speculative, but occasionally fever and muscular pains are caused by sensitization. I have recently seen 1 such case, due to milk, which had been previously diagnosed as rheumatic fever. In my opinion infection is merely an exciting factor in the causation of asthma. Furthermore, if allergenic foods are removed, susceptibility to colds is lessened. One wonders whether he should use antispasmodic drugs in allergic children who have colds.

DR. NATHAN GORIN, Brookline, Mass.: What is the definition of a cold? After all, every child with oncoming asthma has an increased nasal secretion.

DR. R. E. SANGSTON, Uniontown, Pa.: Irritants may also cause asthma.

DR. H. M. EISENOFF, New York: The demarcation between a virus infection and a bacterial one is not always clear. Chemotherapy can be of great help in eliminating an infectious focus.

DR. BRET RATNER, New York: Is the common cold an allergic manifestation? As children get older, they come out of the allergic phase and a humoral resistance develops. Most of us give vaccines to increase this immunity.

DR. L. W. HILL, Boston: Do you think vaccines will cure asthma?

DR. BRET RATNER, New York: Vaccines are used more for the purpose of having the patients return, so that they may be watched.

DR. L. W. HILL, Boston: I get good results in infectious asthma in about 50 per cent of my cases. The problem of frequent colds in children is an important one. Their avoidance is difficult, as is the determination of the relative importance of allergy and infection in each instance. Dr. Bivings has made considerable investigation of their control with the use of vaccines. I should like to hear his point of view.

DR. F. LEE BIVINGS, Atlanta, Ga.: The relationship of colds to asthma is more definite than the decision whether the manifestations are caused by specific bacterial sensitization or a nonspecific reaction. I feel that asthmatic bronchitis is different from true asthma. Nasal smears help in differentiating the infectious group from the allergic. Those patients with a high polymorphonuclear content get help from an autogenous vaccine, stock vaccine or even from treatment with nonspecific material. There is a place for vaccine therapy in those patients presenting the picture of infection of the respiratory tract, but the allergic element should be determined and treated also.

DR. H. B. MARK, Riverton, N. J.: There is a report of relief in 65 per cent of the patients treated by swabbing with neo-synephrine hydrochloride by means of a curved wire applicator to the postnasal space.

DR. L. W. HILL, Boston: Drainage of the postnasal space helps.

DR. H. E. BLAIR, Hagerstown, Md.: Application of radium is being used increasingly to alleviate the element of infection and hearing difficulty on this basis. Therefore, it should be of value in the management of those cases in which there is a combined infectious and allergic background.

DR. E. S. PLATOU, Minneapolis: Will the use of tripelennamine hydrochloride over a long period predispose to asthma?

DR. NATHAN GORIN, Brookline, Mass.: Little is known of its cumulative or toxic effects.

DR. H. B. ROTHBART, Detroit: Is one justified in withholding desensitization treatment in those instances in which the antihistaminic drugs are effective?

DR. L. W. HILL, Boston: Yes. If the patient gets relief, use them in preference to desensitization.

DR. LOUIS TUFT, Philadelphia: In a recent series of 500 patients in Buffalo treated with tripelennamine hydrochloride the best results were obtained with desensitization by specific pollen therapy.

DR. BRET RATNER, New York: It is horrible to conceive of taking pills over a period of years, rather than building up a permanent immunity.

DR. L. W. HILL, Boston: I agree with that.

DR. BRET RATNER, New York: Further study on the antihistaminic drugs will prove or disprove the histamine theory.

DR. E. S. PLATOU, Minneapolis: Will pyridoxine neutralize the side effects of the antihistaminic drugs?

DR. LOUIS TUFT, Philadelphia: I do not know.

DR. L. W. HILL, Boston: What is the experience of the group with antihistaminic drugs in atopic dermatitis?

DR. JEROME GLASER, Rochester, N. Y.: The results are inconstant. The itching is relieved in some patients. Symptomatic relief is seen at times in asthma. Tripelennamine hydrochloride will clear up an occasional case of undiagnosed atopic dermatitis.

Book Reviews

Health Insurance in the United States. By Nathan Sinai, Odin W. Anderson and Melvin L. Dollar. Price, $1.50. Pp. 115, with no illustrations. New York: Commonwealth Fund, Division of Publications, 1946.

"Health Insurance in the United States" is the tenth in a series of monographs published under the auspices of the Committee on Medicine and the Changing Order of the New York Academy of Medicine. Primarily, the book is a history of the health insurance movement in the United States, and shows the relation of the various phases of this history to those groups that have opposed and promoted the Wagner-Murray-Dingell bills.

The authors divide the movement into three periods. The first, from 1910 to World War I, came about as a result of agitation for workmen's compensation legislation. "It is significant that in the decade following 1911 compensation laws were adopted by 42 states." Paralleling the enactment of workmen's compensation laws, a number of attempts were made to pass general health insurance legislation. Interest in the subject was shown by the fact that "health insurance bills were introduced in three states in 1915 and in twelve states in 1917. . . . Also in 1917 commissions were created in eight states to investigate and report on health insurance." The period ended, however, without a single state enacting legislation and without the introduction of a health insurance bill in Congress.

The second period of the health insurance movement is designated "in the 1920's." The period was marked by increased activity in the field on the part of the United States Public Health Service and was climaxed by the creation of the Committee on the Costs of Medical Care.

The third period of the movement is described as "The Depression to World War II." It was during this period that the findings of the Committee on the Costs of Medical Care were published. The period was also characterized by increased activity in the field of medical care on the part of many departments of the federal government. One of the highlights was the National Health Conference, held in Washington, D. C., for the purpose of discussing the findings of the Interdepartmental Committee to Coordinate Health and Welfare Activities.

In an effort to explain the health insurance movement more clearly, the authors endeavor to present a chronologic survey of the attitudes of the professional groups, lay groups and the government. "A survey of the attitudes and the shifts in attitudes of the various groups reveals some of the dynamics of the movement and contributes to the understanding of its background."

Three chapters of the book are devoted to enabling legislation for voluntary plans, features and characteristics of such plans and the problems which lie before them.

In conclusion, the authors set forth certain criteria by which they believe the future progress of the movement may be judged. They conclude that "whether voluntary insurance will be given the opportunity to work out the solution depends on the rapidity with which difficulties are faced and overcome."

This study, together with the other studies of the Committee on Medicine and the Changing Order, is valuable as a reference work to anyone interested in the socioeconomic phase of medical care. The committee has recently released its final two studies, which complete the work it began in 1942.

The Pocket Book of Baby and Child Care. By Benjamin Spock. Price, $0.25. Pp. 217, with several illustrations. New York: Pocket Books, Inc., 1947.

This book had its first printing in April 1946 and has since been reprinted several times, proving its acceptance by the public. The late date of its first appearance and the author's experience in the fields of pediatrics and psychiatry assure the reader of finding authoritative and up-to-date information. The book is written for parents but has been found valuable in the instruction of nurses and medical students. It familiarizes them with everyday problems of pediatric practice and gives them a common sense appreciation of most of the physiologic processes of human life. The book is of real help to the pediatrician because it answers and even anticipates many questions young and inexperienced mothers will ask. Many young mothers, who have not had the advantage of being reared as part of a large family, are faced with unexpected problems and fears. These fears, often magnified by lack of opportunity for adequate discussion and explanation, lead to nervous tension which, in turn, may reflect on the mental health of the child. Spock's book, easy to read and to understand, at a price which everyone can afford, permits the mother to anticipate mental, as well as physical, developmental progress and to face new situations with preparedness.

The book begins with a chapter advising mothers how to prepare themselves mentally and physically for the arrival of the baby. Breast feeding, bottle feeding and additional foods are discussed in plain words, leaving sufficient leeway for individual variation, thus carefully avoiding conflict with opinions of the pediatrician consulted by the mother. The author's great experience and thorough understanding of young mothers is demonstrated again and again by his discussion of details, such as how to keep the soap from running into the baby's eyes during the daily bath and how to equip for traveling.

This easy to read, pleasantly written book is highly recommendable to all parents, but before doing so the physician should familiarize himself with its contents. He will find its counsel helpful in his daily conversations with mothers, and his attention will be attracted to all the little problems in the minds of young mothers which it would take years of experience to accumulate. To have this book read by his patients' young mothers will be much to the physician's advantage, as it will shorten his consultation time and reduce the number of anxious telephone calls.

Fundamentals of Immunology. Second edition. By W. C. Boyd. Price, $5.50. Pp. 446, with 45 illustrations. New York: Interscience Publishers, Inc., 1946.

This second edition adequately brings up to date a first edition addressed principally to medical students and research workers. The attempt is made to present the fundamentals of immunology in an informative manner to those without previous schooling in the subject and, within the limitations imposed by the intricacy of the subject matter, it succeeds admirably well. Immunologic terminology is well clarified by the text; chemical discussion seems to take for granted somewhat more knowledge on the part of the reader.

Throughout the book there is a definite attempt to reconcile immunologic principles with chemical phenomena. The reviewer cannot judge regarding the appropriateness of this book for the early instruction of medical students but recommends that it be thoughtfully read by the pediatrician who will thereby clarify his knowledge of many important clinical problems of his practice.

The theoretic background of immunology is presented comprehensively and in an interesting manner. One of the most interesting concepts which occurs throughout concerns the nonhomogeneity of antibodies as it affects various immuno-

logic phenomena. The possible importance of the "spreading factor" as a function of bacterial virulence is commented on. The pediatrician will be interested in the concepts which underlie immunity to toxins, bacteria, viruses and parasites and in the factors which are concerned with blood grouping, transfusion compatibility, the nature of Rh disturbances and the significance of diagnostic serologic tests. There is extensive discussion of anaphylaxis and allergy and of the application of immunologic principles to immunization and immunotherapy. A final chapter is devoted to practical details of technic and includes a lucid discussion of statistical analysis as applied to this field. An excellent summary follows each chapter and an extensive bibliography is well integrated with the text.

This volume is recommended for careful reading by the pediatrician who desires to be brought up to date on the fundamentals of clinical immunology.

Aids to the Diagnosis and Treatment of Diseases of Children. Eighth edition. By F. M. B. Allen. Price, $2. Pp. 268. London: Baillière, Tindall & Cox, 1947; Baltimore: The Williams and Wilkins Company, 1948.

This eighth edition of a familiar and popular book, which has been used by generations of English students, is the first thorough revision since 1936 and is as interesting as any of the newer English textbooks. The text is clearly written, as in most English books. Clinical descriptions are excellent and, while brief, are not lacking in essential information.

Treatment, from an American point of view, leaves something to be desired. The book was rewritten in 1947, but penicillin is not recommended as freely as we would think desirable, nor are doses suggested. Meningitis is to be treated with serum intrathecally for at least four days. Penicillin is recommended, but sulfonamide compounds are relegated to the shelf as being hardly of value. Since we have developed a highly specialized technic for the care of premature infants, it is amazing to think of putting a premature baby to the breast. There are many such deviations from what we consider the best practice, but, on the whole, these are minor faults.

Dr. Allen has written from a long experience in pediatrics. Thus, his book is of considerable value and interest. The format is familiar, but the quality of the binding and printing have suffered as a result of the war economy standards.

The book is recommended for its purpose—as an aid, rather than as a textbook.

Baby Care from Birth to Birthday. By Edmund G. Lawler, M.D. Price, $3.95. Pp. 406, with 221 illustrations. Chicago: Follett Publishing Co., 1947.

This attractive book was written by a practicing pediatrician as a guide for mothers during the first year of the baby's life. Its scope of only one year is likely to satisfy most mothers, whose greatest problems arise in their first year of motherhood. The text is divided into chapters covering each month of life, with additional sections on the baby's needs, feeding, premature babies, diseases and disorders of infancy, contagious and infectious diseases and emergency treatment and first aid.

Dr. Lawler has attempted to answer questions he is most frequently asked in his practice. Certainly he covers the more important ones, and if many are left unanswered, no book would cover all of them. Few pediatricians will find any serious criticisms to make of the text, which is clearly and concisely written. The illustrations are both profuse and excellent and will in themselves form a valuable text for new mothers.

The book is excellently conceived and well written. The author states in his preface that it is intended as an aid to the mother in her job of building a healthy, happy baby, a supplement to the physician's advice. It should be found an excellent book for this purpose.

Directory of Pediatric Societies *

INTERNATIONAL

International Association of Preventive Pediatrics

President: Prof. S. Monrad, Dronning Louises Børnehospital, Copenhagen, Denmark.
Secretary: Dr. Daniel Oltramare, 15 Rue Lévrier, Geneva, Switzerland.

Sixth International Congress of Pediatrics

President: Prof. Guido Fanconi.
American Committee:
President: Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn.
Secretary-General: Dr. L. Emmett Holt Jr., 477 First Ave., New York 16.
Canadian Committee:
Chairman: Dr. Alan Brown, Hospital for Sick Children, 67 College St., Toronto.
Secretary: Dr. S. G. Ross, 1390 Sherbrooke St. W., Montreal.
Place: Zurich, Switzerland. Time: July 24-28, 1950.

International Congress for the Protection of Infancy

Secretary: Prof. G. B. Allaria, Corso Bramante 29, Torino 120, Italy.

Pan American Congress of Pediatrics

President: Dr. Felix Hurtado, Habana, Cuba.

International Union for Child Welfare

President: Mrs. Gordon Morier.
Secretary: Dr. Georges Thélin, 43 Quai Wilson, Geneva, Switzerland.

FOREIGN

Argentine Pediatric Society of Buenos Aires

President: Dr. Martin Ramón Arana, 1809 Rodriguez Peña, Buenos Aires.
General Secretary: Dr. Alfredo Larguia, Cerrito 1179, Buenos Aires.

Associação Paulista de Medicina, Secção de Pediatrias

President: Dr. Armando de Arruda Sampaio.
First Secretary: Dr. Luis Fontoura y Lauro Machado Oliveira, Caixa Postal 2103, São Paulo, Brazil.
Second Secretary: Dr. Luiz Augusto Monteiro Toledo, Av. Brigadeiro Luiz Antonio 393, 1° Andar, São Paulo, Brazil.
Time: Twelfth of every month, 8:30 p. m.

British Paediatric Society

President: Dr. H. T. Ashby, 13 St. John St., Manchester, England.
Joint Secretary: Prof. Alan Moncrieff, Hospital for Sick Children, Great Ormond St., London W. C. 1.
Place: Windermere.

Chinese Pediatric Society

President: Dr. W. S. Fu, The Shanghai Public Hospital for Children, 11 Hsiang Shan Road, Shanghai, China.
Secretary: Dr. T. F. Su, The Shanghai Public Hospital for Children, 11 Hsiang Shan Road, Shanghai, China.
Time: Concurrent with the annual conference of the Chinese Medical Association.

* Secretaries of societies are requested to furnish the information necessary to make this list complete and to keep it up to date.

Danish Pediatric Society

President: Prof. E. Lenstrup, Copenhagen.
Secretary: Dr. Gjørup, Dronning Louises Børnehospital, Copenhagen.

Nederlandsche Vereeninging voor Kindergeneeskunde

President: Dr. J. L. Keyzer, 114 St. Josephstr., Tilburg.
Secretary: Dr. H. Reerkink, % Sophia Kinderziekenhuis, 160 Gordelweg, Rotterdam.
Place: Children's Hospital or Pediatric Clinic. Time: Three times a year.

Palestine Jewish Medical Association, Section of Physicians of Children's Diseases

President: Prof. L. F. Meyer, 29 Toelsohn St., Tel Aviv.
Secretary: Dr. A. Brünn, 9 Maazestre, Tel Aviv.

Royal Society of Medicine, Section for the Study of Diseases in Children

President: Prof. J. M. Smellie, 5 Flat, 8 Bolingbroke Grove, London S. W. 11.
Secretary: Dr. Mary Wilmers; Dr. R. Bonham Carter.
Place: 1 Wimpole St., London W. 1. Time: Fourth Friday of each month, 4:15 p. m.

Schweizerische Gesellschaft für Pädiatrie

President: Prof. Dr. A. Hottinger, Petersplatz 12, Basel.
Secretary: Dr. F. Hauser, Kinderspital, Basel.

Sociedad Boliviana de Pediatria

President: Prof. Dr. Luis V. Sotelo.
Secretary: Dr. Carlos Ferrufino, Casilla 272, La Paz, Bolivia.
Place: Casilla de Correos 12, La Paz, Bolivia.

Sociedad Chilena de Pediatria

President: Mr. Raúl Matte, Santiago, Chile.
General Secretary: Dr. Mariano Latorre, Santiago, Chile.
Place: Medical Society, Santiago, Chile. Time: 7:30 p. m., weekly.

Sociedad Cubana de Pediatria

President: Prof. Agustin Castellanos.
Secretary: Dr. Carlos Hernandez Miyares, Hospital Nuestra Señora de las Mercedes L y 21, Apartado 2430, Habana.
Place: Cátedra de Clinica Infantil, Hospital Nuestra Señora de las Mercedes y Hospital Municipal de Infancia, Habana. Time: 9 p. m., last Wednesday of every month.

Sociedad Dominicana de Pediatria

President: Dr. Alberto Peguero, Avenida Bolivar 117, Ciudad Trujillo, R.D.
Secretary-Treasurer: Dr. Jaime Jorge, Lea de Castro 19, Ciudad Trujillo, R.D.
Place: Children's Ramfis Hospital. Time: 8 p. m., last Friday of every month.

Sociedad Ecuatoriana de Pediatria

President: Dr. Alfredo Ceballos Carrión.
Secretary: Dr. Rafael Compte Andrade, P. O. Box 3480, Guayaquil.
Place: Hospital Central. Time: 11:30 a. m., every Friday.

Sociedad Mexicana de Pediatria

President: Dr. Jesus Avarez de los Cobos.
Secretary: Dr. Luis Torregrosa F.
Place: Hospital Infantil. Time: Last Thursday of every month.

SOCIEDAD DE PEDIATRÍA DE CONCEPCIÓN (CHILE)

President: Dr. Raúl Ortega A., Hospital Clínico Regional, Concepción.
Secretary: Dr. Fidel Urrutia, Hospital Clínico Regional, Concepción.
Place: Hospital Clínico Regional, Concepción. Time: 7:30 p. m., Second Tuesday of every month from April to December, inclusive.

SOCIEDAD DE PEDIATRÍA DE CÓRDOBA

President: Dr. Juan Francisco Herrera, Córdoba, Argentina.
Secretary: Dr. Albino F. Dottori, Dean Fumes 2000, Esq. Ocaña (N.), Córdoba, Argentina.
Place: Comite pro Defenso del Niño, Dean Fumes 2000, Córdoba, Argentina.
Time: Once a month.

SOCIEDAD DE PEDIATRIA DEL LITORAL

President: Dr. Jose E. Celoria, Hospital Centenario, Rosario, Argentina.
Secretary: Dr. Gloria Lovell, Hospital Centenario, Rosario, Argentina.

SOCIEDAD DE PEDIATRÍA DE SANTIAGO DE CUBA

President: Dr. Antonio Béguez César, Sagarra 107, Santiago de Cuba.
Secretary: Dra. Susana Texdó Vaillant, Padre Pico 57, Santiago de Cuba.
Place: Colegio Médico. Time: Last Tuesday of every month.

SOCIEDAD VENEZOLANA DE PUERICULTURA Y PEDIATRIA

President: Dr. Pastor Oropeza, Caracas.
Secretary: Dr. Guillermo Flores, Chacin, Sur 17, no. 26-2, Caracas.
Place: Hospital Municipal de Niños, Caracas. Time: Once a Month.

SOCIEDAD YUCATECA DE PEDIATRIA

President: Dr. José Lavalle, Yucatan, Mexico.
Secretary: Dr. Francisco Solís, Yucatan, Mexico.
Place: Hospital del Niño, Yucatan, Mexico.

SOCIÉTÉ DE PÉDIATRIE DE PARIS

President: Dr. G. Heuyer, 1 Ave. Emile Deschanel, Paris 7e, France.
Secretary: Dr. Maurice Lamy, 94 rue de Varenne, Paris 7e, France.
Place: Hôpital des Enfants Maladies, 149 Rue de Sèvres. Time: 4:30 p. m., third Thursday of every month.

SOUTH AFRICAN PAEDIATRIC ASSOCIATION

Chairman: Dr. Basil Melle, 89 Lister Bldg., 195 Jeppe St., Johannesburg, South Africa.
Secretary-Treasurer: Dr. Seymour Heymann, 17 Lister Bldg., 195 Jeppe St., Johannesburg, South Africa.

SWEDISH MEDICAL SOCIETY, SECTION FOR PEDIATRICS AND SCHOOL HYGIENE

President: Dr. R. Hybbinette, Kommendorsgatan 3, Stockholm.
Secretary: Dr. B. Broman, Eriksbergsgatan 1A, Stockholm.
Place: Various clinics and hospitals in Stockholm and Uppsala. Time: Second Friday of each month (except summer).

URUGUAYAN SOCIETY OF PEDIATRICS

President: Dr. Héctor C. Bazzano.
Secretary: Dr. José M. Portillo.
Place: Club Medico del Uruguay, Avenda Agraciada 1464 (Piso 13), Montevideo.

NATIONAL

AMERICAN MEDICAL ASSOCIATION, SCIENTIFIC ASSEMBLY, SECTION ON PEDIATRICS

Chairman: Dr. Woodruff L. Crawford, 321 W. State St., Rockford, Ill.
Secretary: Dr. Margaret Mary Nicholson, 1801 Eye St. N. W., Washington, D. C.
Place: Atlantic City, N. J. Time: June 6-10, 1949.

American Academy of Pediatrics

President: Dr. Warren R. Sisson, 319 Longwood Ave., Boston 15.
Secretary: Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill.
Place: Atlanta, Ga. Time: April 13-15, 1949.
Annual Meeting: Place: San Francisco. Time: Nov. 14-17, 1949.

American Hospital Association, Massachusetts Hospital Association

Chairman: Dr. Frank Wing, Boston.
Secretary: Dr. W. Franklin Wood, McLean Hospital, Waverly 79, Mass.

American Pediatric Society

President: Dr. Valjean Cooke, 8700 Argyle Ave., St. Louis.
Secretary-Treasurer: Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12.
Place: Atlantic City. Time: May 3-5 (?), 1949.

Canadian Society for the Study of Diseases of Children

President: Dr. P. E. Williams, 193 James St. S., Hamilton, Ontario.
Secretary-Treasurer: Dr. R. L. Denton, 1615 Cedar Ave., Montreal.

Society for Pediatric Research

President: Dr. Sidney Farber, 300 Longwood Ave., Boston.
Secretary: Dr. Robert Ward, Bellevue Hospital, New York 16.

SECTIONAL

Intermountain Pediatric Society

President: Dr. Spencer Snow, 75 S. Main St., Salt Lake City.
Secretary-Treasurer: Dr. Esther Gross, 202 E. South Temple St., Salt Lake City.
Place: Salt Lake City General Hospital. Time: First Thursday of each month, 8 p. m.

New England Pediatric Society

President: Dr. Howard W. Brayton, 179 Allyn Street, Hartford 3, Conn.
Secretary-Treasurer: Dr. Harry Shwachman, 300 Longwood Ave., Boston.
Place: Boston Medical Library. Time: Three meetings a year, occurring from September to May.

North Pacific Pediatric Society

President: Dr. Clarence L. Lyon, 407 Riverside Ave., Spokane 8, Wash.
Secretary: Dr. Aldis B. Johnson, 515 Cobb Bldg., Seattle, Wash.

Northwestern Pediatric Society

President: Dr. Paul Bancroft, 909 Sharp Bldg., Lincoln, Neb.
Secretary-Treasurer: Dr. Northrop Beach, 1009 Nicollet Ave., Minneapolis.
Place: Minneapolis, St. Paul, Duluth and Rochester. Time: January, April, July and October.

Rocky Mountain Pediatric Society

President: Dr. John M. Nelson, 1558 Humboldt St., Denver.
Secretary: Dr. Edwin T. Williams, 1850 Gilpin St., Denver 6.
Place: Children's Hospital of the Colorado General Hospital. Time: Monthly from October to June.

Southern Medical Association, Section of Pediatrics

Chairman: Dr. Carroll M. Pounders, 1200 N. Walker St., Oklahoma City.
Secretary: Dr. Samuel F. Ravenel, 371 N. Elm St., Greensboro, N. C.

STATE

Alabama Pediatric Society

President: Dr. W. A. Daniel Jr., 115 S. Union St., Montgomery 5, Ala.
Secretary-Treasurer: Dr. D. B. Monsky, 905 Norman Bridge Rd., Montgomery 6, Ala.
Place: Montgomery, Ala. Time: September 1949

ARIZONA PEDIATRIC SOCIETY

President: Dr. Hugh Thompson Jr., 110 S. Scott St., Tucson, Ariz.
Secretary: Dr. James R. Sickler, Physicians Bldg., Tucson, Ariz.
Place: Phoenix or Tucson. Time: On call.

ARKANSAS STATE PEDIATRIC ASSOCIATION

Chairman: Dr. C. B. Billingsley, 1425 N. 11th St., Fort Smith.
Secretary: Dr. R. E. Weddington, 1425 N. 11th St., Fort Smith.

CALIFORNIA STATE MEDICAL SOCIETY, SECTION ON PEDIATRICS

Chairman: Dr. Alice Potter, 1418 Ninth Ave., San Francisco 22.
Secretary: Dr. Carl Erickson, 595 E. Colorado, Pasadena.
Place: Los Angeles. Time: April 1949.

FLORIDA STATE PEDIATRIC SOCIETY

President: Dr. Edgar W. Stephens, 910 Harvey Bldg., West Palm Beach.
Secretary: Dr. Hugh A. Carithers, 2000 Park St., Jacksonville 4.
Place: Concurrent with state association convention and fall meeting.

GEORGIA PEDIATRIC SOCIETY

President: Dr. Lee Bivings, 20 Fourth St. N. W., Atlanta.
Secretary-Treasurer: Dr. Don F. Cathcart, 478 Peachtree St. N. E., Atlanta.
Place: Atlanta. Time: At time of annual state meeting.

HEZEKIAH BEARDSLEY PEDIATRIC CLUB OF CONNECTICUT

President: Dr. F. M. Meyer, 144 Golden Hill St., Bridgeport, Conn.
Secretary: Dr. Herman Yannet, Southbury Training School, Southbury.

ILLINOIS STATE MEDICAL SOCIETY, SECTION ON PEDIATRICS

Chairman: Dr. Eugene T. McEnery, 4458 W. Madison St., Chicago 24.
Secretary: Dr. George L. Drennen, Jacksonville, Ill.
Place: Palmer House, Chicago. Time: May 10-12, 1949.

INDIANA STATE PEDIATRIC SOCIETY

President: Dr. K. T. Knode, 1105 E. Jefferson Bldg., South Bend.
Secretary-Treasurer: Dr. Matthew Winters, 621 Hume Mansur Bldg., Indianapolis.
Time: Two meetings a year.

IOWA PEDIATRIC SOCIETY

President: Dr. Charlotte Fisk, 1201 Equitable Bldg., Des Moines 9.
Secretary-Treasurer: Dr. James Dunn, Davenport Bank Bdg., Davenport.
Place: Des Moines. Time: April 1949.

LOUISIANA STATE PEDIATRIC SOCIETY

President: Dr. William C. Rivenbank, 1448 Louisiana Ave., New Orleans 15.
Secretary-Treasurer: Dr. Bertha Wexler, 3439 Prytania St., New Orleans 15.
Place: New Orleans. Time: May 7, 1949.

MEDICAL SOCIETY OF THE STATE OF NEW YORK, PEDIATRIC SECTION

Chairman: Dr. Carl H. Laws, 12 Pierrepont St., Brooklyn.
Secretary: Dr. George R. Murphy, 292 Madison Ave., New York.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, PEDIATRIC SECTION

Chairman: Dr. Waldo E. Nelson, Temple University, Philadelphia 40.
Secretary: Dr. Carl C. Fischer, 100 W. Coulter St., Philadelphia 44.

MICHIGAN STATE MEDICAL SOCIETY, PEDIATRIC SECTION

Chairman: Dr. H. J. Lewis, 2956 Biddle Ave., Wyandotte.
Secretary: Dr. Robert H. Trimby, 122 W. Hillsdale, Lansing.

Mississippi State Pediatric Society

President: Dr. Harvey F. Garrison Jr., 315 E. Capitol Place, Jackson.
Secretary: Dr. Guy Verner, 126 N. Congress St., Jackson.

Nebraska Pediatric Society

President: Dr. Gerald C. O'Neil, 116 S. 49th Ave., Omaha 3.
Secretary-Treasurer: Dr. Michael Crofoot, 1407 Medical Arts Bldg., Omaha 2.
Place: Children's Memorial Hospital. Time: Third Thursday of each month from October to June, inclusive. Dinner at 6 p. m.

New Jersey Medical Society, Pediatric Section

Chairman: Dr. Robert E. Jennings, 117 Washington St., East Orange.
Secretary: Dr. Israel J. Wolf, 231 E. 31st St., Paterson.

New Mexico State Pediatric Society

President: Dr. M. K. Wylder, 221 W. Central Ave., Albuquerque.
Secretary-Treasurer: Dr. Ly Werner, 221 W. Central Ave., Albuquerque.

North Carolina Pediatric Society

President: Dr. Samuel F. Ravenel, 371 N. Elm St., Greensboro, N. C.
Secretary: Dr. Charles H. Gay, 1523 Elizabeth Ave., Charlotte, N. C.

Northern California Pediatric Society

President: Dr. William C. Deamer, 3 Fifth Ave., San Francisco 18.
Secretary: Dr. A. L. Gleason, 1066 Longridge Rd., Oakland 10.
Place: San Francisco. Time: Second Thursday of February, April, September and November.

Oklahoma State Pediatric Society

President: Dr. J. B. Snow, 625 N. W. 10th St., Oklahoma City.
Secretary: Dr. Bertha Levy, 1200 N. Walker St., Oklahoma City.
Place: With Oklahoma State Medical Association. Time: Annual Meeting.

Philippine Pediatric Society

President: Dr. Alberto V. Tupas, Department of Pediatrics, College of Medicine, University of the Philippines, Manila, Philippines.
Secretary: Dr. Artemio P. Jongco, Department of Pediatrics, College of Medicine, University of the Philippines, Manila, Philippines.
Place: Philippine General Hospital. Time: Every two months.

South Carolina Pediatric Society

President: Dr. B. Owen Ravenel, 95 Rutledge Ave., Charleston 16.
Secretary-Treasurer: Dr. John R. Harvin, 206 N. Sumter St., Sumter.

Tennessee Pediatric Society

President: Dr. W. O. Vaughan, 2103 Hayes St., Nashville 5.
Secretary-Treasurer: Dr. C. Barton Etter, 1678 Peach, Memphis 12.
Place: Chattanooga. Time: Second Monday in April.

Texas Pediatric Society

President: Dr. Charles B. Alexander, 1716 Nix Professional Bldg., San Antonio 5.
Secretary-Treasurer: Dr. John E. Ashby, 3610 Fairmount Ave., Dallas 4.

Virginia Pediatric Society

President: Dr. C. P. Brown, 142 W. York St., Norfolk.
Secretary: Dr. E. Berkeley Neal, 303 Washington Ave. S. W., Roanoke.

West Virginia State Medical Society, Section on Pediatrics

President: Dr. Thomas G. Folsom, 1139 Fourth Ave., Huntington.
Secretary: Dr. Warren J. Parsons, 425 Eleventh St., Huntington.

WISCONSIN STATE MEDICAL SOCIETY, SECTION ON PEDIATRICS

Chairman: Dr. M. G. Peterman, 411 E. Mason St., Milwaukee 2.
Secretary: Dr. L. M. Simonson, 1001 N. 8th St., Sheboygan.

LOCAL

ACADEMY OF MEDICINE OF CLEVELAND, PEDIATRIC SECTION

Chairman: Dr. John Hart Davis, 10515 Carnegie Ave., Cleveland.
Secretary: Dr. Francis F. Silver, 9400 Euclid Ave., Cleveland.
Place: Allen Memorial Medical Library. Time: 8:15 p. m., October, December, February and April.

ACADEMY OF MEDICINE, TORONTO, SECTION OF PEDIATRICS

President: Dr. A. L. Chute, 170 St. George St., Toronto, Canada.
Secretary: Dr. John Fletcher, 262 St. Clair St. W., Toronto, Canada.
Place: Academy of Medicine. Time: 8:30 p. m., third Thursday of each month.

BALTIMORE CITY MEDICAL SOCIETY, PEDIATRIC SECTION

Chairman: Dr. Charles O'Donovan Jr., 5 E. Read St., Baltimore .
Secretary: Dr. T. Campbell Goodwin, 16 E. Biddle St., Baltimore.

BRONX PEDIATRIC SOCIETY

President: Dr. Harry S. Pizer, 1726 Davidson Ave., New York.
Secretary: Dr. William A. Schonfeld, 211 W. 106th St., New York 25.
Place: Morrisania City Hospital. Time: 8:30 p. m., second Wednesday of each month, except June, July, August and September.

BROOKLYN ACADEMY OF PEDIATRICS

President: Dr. Harold T. Vogel, 3420–86th St., Jackson Heights, N. Y.
Secretary: Dr. Bernard Benjamin, 845 Park Pl., Brooklyn 16.
Place: Granada Hotel. Time: 8:45 p. m., fourth Wednesday of February, March, April, October and November.

BUFFALO PEDIATRIC SOCIETY

President: Dr. Douglas P. Arnold, 159 Bidwell Parkway, Buffalo, N. Y.
Secretary: Dr. Richard A. Downey, 786 Forest Ave., Buffalo 9, N. Y.
Place: Children's Hospital, 219 Bryant St. Time: 8:30 p. m., first Monday of each month from September to June.

CENTRAL NEW YORK PEDIATRIC CLUB

President: Dr. T. Wood Clarke, 7 Cottage Place, Utica.
Secretary: Dr. Frank J. Williams, 58 S. Swan St., Albany.
Place: Various cities in New York. Time: Third Tuesday of April and October.

CHICAGO PEDIATRIC SOCIETY

President: Dr. John L. Reichert, 1791 Howard St., Chicago 26.
Secretary: Dr. Alvah L. Newcomb, 723 Elm St., Winnetka, Ill.
Place: Children's Memorial Hospital, 710 Fullerton Ave. Time: Third Tuesday of each month, October to May inclusive.

CINCINNATI PEDIATRIC SOCIETY

President: Dr. John H. Hunt, Kemper Lane Bldg., Cincinnati.
Secretary: Dr. William F. Hunting, 6048 Montgomery, Cincinnati.
Place: Children's Hospital, Elland Ave., Cincinnati. Time: On call.

DALLAS PEDIATRIC SOCIETY

President: Dr. Guy Hacker, 5711 Goliad St., Dallas.
Secretary-Treasurer: Dr. George R. Branch, 4325 Cole Ave., Dallas.
Place: Children's Hospital of Texas and Bradford Memorial Hospital. Time: 1 p. m., third Saturday and 8:30 p. m., the first Tuesday of each month.

DETROIT PEDIATRIC SOCIETY

President: Dr. Harold B. Rothbart, 773 Fisher Bldg., Detroit 2.
Secretary: Dr. S. S. Bernstein, 650 Maccabees Bldg., Detroit.
Place: Variable. Time: Five times annually.

HONOLULU PEDIATRIC SOCIETY

President: Dr. Donald Marshall, Medical Group, Honolulu.
Secretary-Treasurer: Dr. Teruo Yoshina, 1221 Victoria St., Honolulu.

HOUSTON PEDIATRIC SOCIETY

President: Dr. Edward O. Fitch, 3720 Fannin St., Houston, Texas.
Secretary: Dr. Thomas J. Donovan, 3506 Sunset Blvd., Houston 5, Texas.
Place: River Oaks Country Club. Time: 7:30 p. m., last Tuesday of each month.

KANSAS CITY (MISSOURI) PEDIATRIC SOCIETY

President: Dr. Harry M. Gilkey, 1624 Professional Bldg., Kansas City.
Secretary: Dr. Leland Speer, 1022 Hoel Parkway, Kansas City.
Place: Kansas City General Hospital. Time: On call.

KNOXVILLE-OAK RIDGE PEDIATRIC SOCIETY

President: Dr. Henry S. Christian, 205 Medical Arts Bldg., Knoxville, Tenn.
Secretary: Dr. John Eggleston, Oak Ridge Hospital, Oak Ridge, Tenn.

LOS ANGELES COUNTY MEDICAL ASSOCIATION, PEDIATRIC SECTION

President: Dr. Elena Boder, 1830½ Lucille Ave., Los Angeles 26.
Secretary-Treasurer: Dr. Robert Simonds, 267 S. Beverly Dr., Beverly Hills, Calif.
Place: Los Angeles County Medical Association Bldg., 1925 Wilshire Blvd. Time: Second Monday of February, April, June, October and December.

MEDICAL SOCIETY OF THE COUNTY OF KINGS AND THE ACADEMY OF MEDICINE OF BROOKLYN, PEDIATRIC SECTION

President: Dr. Harold Levy, 750 St. Marks Ave., Brooklyn 16.
Secretary: Dr. Jacob J. Lichterman, 1433 Union St., Brooklyn 13.
Place: 1313 Bedford Ave., Brooklyn. Time: 9:00 p. m., fourth Monday of each month.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, SECTION ON PEDIATRICS

President: Dr. John Washington, 2032 Belmont Rd. N.W., Washington, D. C.
Secretary-Treasurer: Dr. George Maksim, 1418 Good Hope Rd. S. E., Washington, D. C.
Place: Medical Society Bldg., 1718 M St. N.W. Time: Spring and fall.

MEMPHIS PEDIATRIC SOCIETY

President: Dr. C. Barton Etter, 1678 Peach, Memphis 12, Tenn.
Secretary-Treasurer: Dr. Jacob Danciger, 188 S. Bellevue Blvd., Memphis 4, Tenn.
Place: University Center, 4 S. Dunlap. Time: 7 p. m., second Tuesday of every month.

MILWAUKEE PEDIATRIC SOCIETY

President: Dr. James Conway, 1721 E. Lake Bluff Blvd., Milwaukee 11, Wis.
Secretary-Treasurer: Dr. Walter Polacheck, 425 E. Wisconsin Ave., Milwaukee 2, Wis.
Place: City Club of Milwaukee. Time: Second Wednesday in February, April, June, October and December.

NEW YORK ACADEMY OF MEDICINE, SECTION ON PEDIATRICS

Chairman: Dr. John Dorsey Craig, 120 E. 75th St., New York 21.
Secretary: Dr. Morris Greenberg, 143 W. 87th St., New York.
Place: New York Academy of Medicine, 2 E. 103d St. Time: Second Thursday of each month from November to May, inclusive, 8:30 p. m.

OKLAHOMA CITY PEDIATRIC SOCIETY

President: Dr. Bertha M. Levy, 717 N. W. 22d St., Oklahoma City 3.
Secretary: Dr. C. M. Bielstein, 301 N. W. 12th St., Oklahoma City 3.
Place: Oklahoma Club. Time: On call.

Philadelphia Pediatric Society

President: Dr. Milton Rapoport, 741 S. 3d St., Philadelphia.
Secretary: Dr. D. Stewart Polk, W. Montgomery Ave., Rosemont, Pa.
Place: College of Physicians, 19 S. 22d St. Time: 8:30 p. m., second Tuesday from October to May, inclusive.

Pittsburgh Pediatric Society

President: Dr. J. A. Gilmartin, 3708–15th Ave., Pittsburgh.
Secretary-Treasurer: Dr. C. J. Stoecklein, Medical Arts Bldg., Pittsburgh 13.
Place: Municipal Hospital, Pittsburgh. Time: Second Friday in October, December, February and April.

Queens Pediatric Society

Chairman: Dr. Walter C. A. Steffen, 42-28 Union St., Flushing, N. Y.
Secretary-Treasurer: Dr. Louis Appel, 33-03 Parsons Blvd., Flushing, N. Y.
Place: Forest Hills, N. Y. Time: Third Monday of October, February, April; first Monday of December.

Richmond Pediatric Society

President: Dr. Thomas S. Chalkley, 421 W. Grace St., Richmond 20, Va.
Secretary-Treasurer: Dr. John Paul Jones, 810 W. Franklin St., Richmond 20, Va.
Place: Medical College Hospital. Time: 8 p. m., third Thursday of each month, except June, July and August.

Rochester Pediatric Society

President: Dr. Jerome Glaser, 85 San Gabriel Dr., Rochester 10, N. Y.
Secretary-Treasurer: Dr. Daniel B. Peeler, 1162 Lake Ave., Rochester 13, N. Y.
Place: Rochester Academy of Medicine or arrangement by program committee.
Time: Third Friday of each month from October to May.

St. Louis Pediatric Society

President: Dr. V. E. Hrdlicka, 7424 Cromwell Dr., St. Louis.
Secretary-Treasurer: Dr. Don L. Thurston, 21 Cambridge Court, St. Louis 22.
Place: Hotel Branscome. Time: Second Thursday of each month from October to May, inclusive, 6:30 p. m.

San Antonio Pediatric Society

President: Dr. Lucius Hill, 328 Medical Arts Bldg., San Antonio 5.
Secretary-Treasurer: Dr. Edith M. Bonnet, 228 Medical Arts Bldg., San Antonio 5.
Place: Bexar County Medical Library. Time: 7:30 p. m., first Tuesday of every month.

Seattle Pediatric Society

President: Dr. Sherod M. Billington, Medical Dental Bldg., Seattle 1.
Secretary: Dr. Jack M. Doctor, 738 Broadway, Seattle 22.
Place: College Club. Time: Fourth Friday of each month from September to June at 6:30 p. m.

Southwestern Pediatric Society

President: Dr. Harry F. Dietrich, 416 N. Bedford Dr., Beverly Hills, Calif.
Secretary: Dr. Clement H. Maloney, Beverly Hills, Calif.
Place: University Club of Los Angeles. Time: 6:30 p. m., second Wednesday in January, March, May, September and November.

University of Michigan Pediatric and Infectious Disease Society

President: Dr. Ernest H. Watson, University Hospital, Ann Arbor.
Secretary: Dr. Harry A. Towsley, 1313 E. Ann St., Ann Arbor.

Westchester County Medical Society, Pediatrics Section (New York)

President: Dr. Harry W. Kaessler, 147 Prospect Ave., Mount Vernon, N. Y.
Secretary-Treasurer: Dr. Elvira Ostlund, 64 Highland Rd., Rye, N. Y.
Place: The Roger Smith Hotel, White Plains, N. Y. Time: Fourth Thursday of every other month from September to June (dinner meetings).